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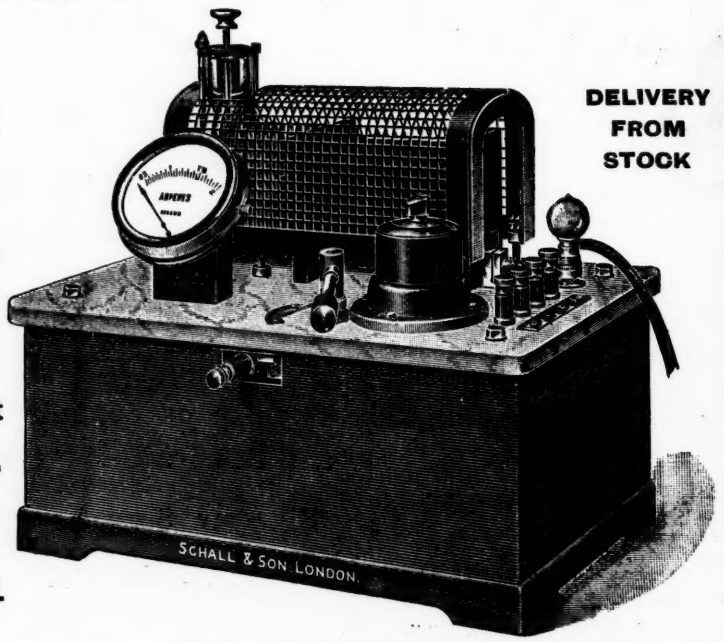

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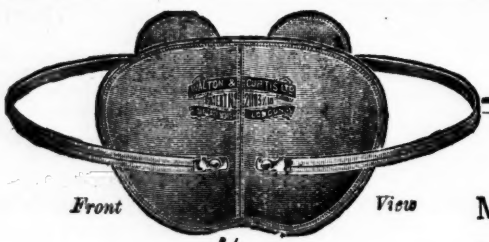

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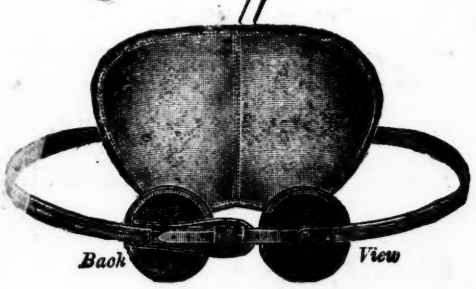

Back View

A British Medical Association Lecture
ON
THE WAR PHYSICAL CENSUS.*

DELIVERED AT AYLESBURY, MAY 11th, 1920,

BY

SIR JAMES GALLOWAY, K.B.E., C.B., M.D.,
SENIOR PHYSICIAN, CHARING CROSS HOSPITAL.

GENTLEMEN,—Meetings of the British Medical Association such as this give an opportunity for discussing subjects of interest to the community at large as well as the problems of diagnosis and treatment of sick folk. I have been informed that there will be present at our conference to-day not only medical men of the district in general practice, but also medical officers of schools and others engaged in carrying out the work of the Ministry of Health and the Board of Education. I venture, therefore, to draw attention to the record of the physical condition of the people now being published by the Government, derived from an analysis of the medical examinations carried out for the purpose of forming and reinforcing our armies during the war.

Earlier Attempts to obtain an Estimate of the Health and Physique of the People.

This is not the first time that there has been an outcry and some danger of believing the statement that there is widespread and progressive deterioration in the condition of the people. Before and after the South African war the "progressive physical degeneration of the nation" became a catchword in the mouths of some of those interested in social reform. The opinion thus expressed was reiterated so often that belief that it was true was widely accepted. One good result of this outcry was the establishment by the Government of an Interdepartmental Committee on Physical Deterioration, which reported in the year 1904. This report is of great value, and should be freely in the hands of our profession, especially those who are concerned in watching and preventing the commencement of physical deterioration and disease. The report now being issued is based on a much greater body of observation, and gives therefore a sounder foundation for the conclusions that will be drawn, and much better reason for any action that may result. My purpose to-day is to draw attention to some of the main features of the present report, with the intention of inquiring what we may do as practising physicians in the course of our daily work to lessen the unnecessarily large incidence of debility and disease seen in the adult, but so often commencing in the young.

Before leaving the subject of the report of 1904, I desire to draw attention to the very wide terms of reference of the Interdepartmental Committee. The original terms of reference were:

> To make a preliminary inquiry into the allegations concerning the deterioration of certain classes of the population, as shown by the large percentage of rejections from physical causes of recruits for the army, and by other evidence, especially the report of the Royal Commission on Physical Training (Scotland), and to consider in what manner the medical profession can best be consulted on the subject with a view to the appointment of a Royal Commission, and the terms of reference of such a Commission if appointed.

These terms of reference were subsequently extended and enlarged as follows:

> 1. To determine, with the aid of such counsel as the medical profession are able to give, the steps that should be taken to furnish the Government and the nation at large with periodical data for an accurate comparative estimate of the health and physique of the people.
> 2. To indicate generally the causes of such physical deterioration as does exist in certain classes; and
> 3. To point out the means by which it can be most effectually diminished.

It is interesting to note how the terms of reference were widened and varied, and especially to know the reliance on our profession to give counsel and aid.

The mental attitude of the people and the Government brings to recollection the state of mind of our difficult patients—they are pressingly anxious to have our advice and assistance when in trouble, but so soon as the immediate cause of anxiety is past they are often unwilling to follow advice or to take the precautions necessary to prevent a recurrence of trouble, and to forget their medical advisers in more ways than one. A good doctor, however, learns how to manage his difficult patients. Let us hope that a reformed medical profession may understand better how to deal with a more reasonable nation.

The somewhat excited outcry years ago about "progressive physical deterioration" originated as a result of the medical examination of recruits for the army, especially before the South African war. It was found that from 40 to 60 per cent. of the young men offering themselves for service in those days were of so feeble development or suffered to such an extent from disease as to be unfit for military service. The knowledge of this fact, and especially the pained observation of the degenerate specimens of humanity offering themselves for service at the various recruiting centres, gave rise to the clamour to which I have referred. The late Sir William Taylor was then Director-General of Medical Service of the army, and I well remember speaking to him many times on this subject. It was owing to his common sense and breadth of outlook that these exaggerated statements were reduced to their proper dimensions and that the work of the Committee was directed along lines that should have proved fruitful. He remarked that the idea of "progressive physical deterioration" had occupied a much too prominent position in the mind of those who had to consider and report on the advisability of inquiry, and drew attention to the fact that the results obtained by the recruiting officers for the army gave no trustworthy basis for the conclusion that there was general physical deterioration, that the numbers concerned were too small, and that the recruits of that day were drawn in excessive numbers from the most defective members of our population. Both Sir William Taylor and General Borrett, who had previously been Inspector-General of Recruiting, agreed that the real lesson of the recruiting figures was the failure of the army in the conditions then existing to attract a good type of recruit, that a great many of those who drifted to the army were young men who had no opening in life, who had no occupation, who were not fit for, or disinclined for, permanent work. The result of these criticisms was that the Committee proceeded to investigate the nature and causes of the deterioration which was manifest, following the advice of Sir William Taylor, given in his evidence—namely, "I trust that the inquiry will end in suggestions that will lead to the institution of measures which will result in bringing about a marked improvement in the physique of the classes from which our recruits are at present drawn." (December 3rd, 1903.)

This report led to very little result. As the effects of the war receded in the distance interest became less in the physical condition of the people, so far, at any rate, as the necessity of providing soldiers was concerned. Very few dreamt that in ten years the whole nation would be under arms, and that compulsory service would be introduced up to the age of 50 years and over. A good deal of interest continued to be shown in the physical condition of certain groups of people—for instance, school children, operatives and employees in some of our great industries—but fitness for war service was lost sight of, or even willingly forgotten.

I have mentioned the report of 1904, and that now being issued, but I recommend that anyone interested in these matters, and in their bearing on our everyday practice, should have by him also certain other documents, such as the Report of the Anthropometric Committee of the British Association, 1883; the Reports on the Physical Welfare of Mothers and Children, published by the Carnegie Trust; Mr. Arthur Greenwood's Report on the Health and Physique of School Children, published for the Ratan Tata Foundation, London School of Economics, University of London; and the Current Reports of the Medical Officers of the Board of Education, which must be familiar to their authors, some of whom I see before me. Certain of these documents possess the interest of historical romance rather than of statistical investigation, as, for instance, the Scottish Report written by Sir William Leslie Mackenzie.

The War Census: How it was made and what it shows.

On August 4th, 1914, or immediately afterwards, it became evident that the manhood of the nation would have to be strained to the utmost to raise the armies

* Much of this lecture was given as a lantern demonstration.

necessary to permit of our survival as a State. The physical condition of the male population once more became a question of supreme importance and urgency, but it was too late to think of measures of reform needing inquiry and time for development—the nation had to take what it possessed. Under the strain of war conditions it was at first hardly possible to obtain a record, or at any rate an accurate record, of our manhood offering themselves for military service. It was only in the later years of the war, and especially in the last year, that methods of systematic medical examination evolved and became so comparatively efficient that trustworthy information on a large scale could be collected for investigation and for the information of the country in the future. A faithful few remembered the lessons of 1904, and so it came about that as opportunity offered arrangements were made to secure accurate information as to the condition of the people which had for so long been desired, even under the pressure of vitally urgent duties. It is to the results of nearly 2,500,000 examinations carried out by some among my audience and many of our colleagues from November 1st, 1917, to November 1st, 1918, that I wish now to draw attention. It may safely be said that such a review became possible in our country only under the compelling circumstances of a war for existence. It would be evidence of unthinkable carelessness and neglect if full advantage of the information now at our disposal is not taken by our fellow citizens and by ourselves, in view of future emergencies and for the immediate purpose of meeting the crying need for the improvement of the health of the people.

During the twelve months preceding the Armistice—1917–1918—2,425,184 medical examinations were conducted. The men examined were classified in the well-known grades established by the Ministry of National Service, with the following results:

Grade 1	871,769 (36%)
Grade 2	546,276 (22–23%)
Grade 3	756,859 (31–32%
Grade 4	250,280 (10%)

Thus, out of every nine men called up for medical examination, three were placed in Grade 1, two in Grade 2, three in Grade 3, and one in Grade 4. By way of making a standard of ready comparison the results obtained by the examination of 1,000 young men of average health and strength, reared under favourable circumstances, were utilized and a proportional standard worked out by Professor Arthur Keith. This standard was found to correspond very closely with the results obtained by examining large numbers of men who had lived in ordinarily favourable circumstances, and the standard may be accepted as adequate for the purpose of the comparison which we desire. Comparing the actual figures with the results obtained by the examination of the normal group taken as representative of a healthy section of the population, we find that we should have expected the following result:

Grade 1	1,697,595 (70%)
Grade 2	485,040 (20%)
Grade 3	181,902 (7.5%)
Grade 4	60,647 (2.5%)

Expressed in terms of Keith's standard of physical fitness for an average normal group, which we have ascertained to be 89.3 per cent., the result given by the medical examinations throughout the country was 70.9 per cent., a deficit of 18.4 per cent. in the fitness of our male population as estimated for service in the army on the widest possible basis. I need hardly draw attention to the serious state of affairs disclosed by these figures, nor need I comment on the fact that the results are by no means comforting or flattering to our national complacency.

It is true that there are certain errors underlying these great masses of figures with which we are dealing. For instance, there were some re-examinations of the same individuals. In certain districts a large number of the fit young men had volunteered or been called up for service before the last year of the war. But, on the other hand, there are counter-balancing conditions, such as the fact that in many places the examinations were carried out for the first time on fit men who had been retained during the earlier years of the war on reserved occupations, such as mining and the making of munitions, and there were the young men presenting themselves for service on reaching the age of 18 in the year under review. It may, I believe, be safely concluded that the actual results obtained would be found to diverge not greatly from what would have been obtained in normal conditions if the whole male population throughout the country had come under review.

In order to understand some of the reasons for this widespread divergence from what we have a right to consider should be the average condition of health in our male population, and from a consideration of these reasons to draw such conclusions as may be helpful to us as the medical advisers of the people with whom we are dealing in our daily practice, it will be useful to review the three main causes which produced unfitness for service. On reviewing the results of large numbers of examinations three main causes of disability are apparent:

1. Poor physique and the presence of physical defects.
2. Tuberculosis, one definite infective disease responsible for widespread damage.
3. Diseases and degeneration of the heart and blood vessels, in many cases due to various infective conditions.

Poor Physique and the Presence of Physical Defects.

With reference to the first of these chief causes of degradation, there can be no doubt in our minds that much of it is due to conditions occurring in early life which are preventable. Take the effect of one disease alone—namely, rickets—on the future development of the child who suffers from it. Its effects on the growth of the body and on the proper development and function of the bone and the other tissues are known to all of us. On reading the reports of the medical officers engaged in this investigation much emphasis is laid again and again on the effects produced by imperfect feeding and on bad home life on large numbers of the children of the nation, especially in crowded industrial areas. One medical officer remarks: "Experience in Manchester teaches that the cause of 'poor physique' in children is the gross ignorance of the simplest forms of domestic economy and cookery amongst the mothers." "The defect was not due to poverty (except in a practically negligible number of cases), but to the lack of knowledge of the mothers (who could have afforded the necessary food) as to how to cook it." These errors in diet are known to us all, and recent investigations have emphasized their importance. They are known to be preventable, and as medical men we are largely responsible for keeping the attention of the public and of the local governing bodies on the fact that these causes of physical degradation exist, that to a large extent they are preventable, and that the proper steps for their prevention must be taken.

Another important cause of defects of physique and of degeneration is the effect of occupation on workers, especially when hard work under the unfavourable conditions existing in certain trades has to be undertaken in early life. One of the most striking features of the report of grading in the industrial districts is the rapid fall of the numbers of the young men who could be placed in Grade 1 at the age of 18 years compared to the numbers who could be placed in the same grade on being examined four or five years later. This is true of many industrial areas, but the most serious effects on health appear to be seen amongst the young workers in the textile industries both in cotton and in wool. A medical officer makes the note with respect to the south-eastern districts of Lancashire that the average man here is for military purposes an old man before he reaches the age of 40. Again, in dealing with the physical condition of the men between 40 and 50 who came up for examination after the Military Service Act of 1918 increased the age limit, he remarks:

"The question naturally arises as to why there should be this high proportion of disabilities."

The "Lancashire folk are hard working and industrious, and from an early age absorbed in industry. Often on questioning youths as to their pastimes I have been told that they have no time for games of any sort. They begin work young and work long hours, and too often they think that they are fully compensated if they can make big wages. Thus the growing boy gets no chance of healthy outdoor exercises to develop his frame."

"That his physical condition is poor does not trouble him. He is only like his fellows."

"The consequence is he contracts rheumatism, bronchitis, hernia on account of the slackness of tone of his muscles, and varix and flat-foot as a result of long hours of standing."

Of 200 youths of 18 to 20 years of age examined and rejected in the north-western region of England, no fewer than 85 were rejected on account of poor physique and

other physical defects. The result of the examination of men from 42 to 50 in the same part of England showed an enormous mass of disability arising from physical defects, most of them acquired not simply as a result of age, but mainly as a result of occupations in which they had been engaged. Take this criticism from Scotland, a part of the country which gave a comparatively good recruiting record of physical fitness. A medical officer writes:

"The examination of the boys was disappointing; the proportion deferred for re-examination as not being up to the standard of physical fitness required for their age was unduly high. This was quite as noticeable amongst the agricultural as amongst industrial classes. Here again the determining factor was feeding and housing; in the case of the agricultural classes the evil of the bothy system, living on tinned foods, cakes and tea, lack of home comforts . . ."

Much of this knowledge is no doubt very familiar, although it has rarely been dragged out into the open day so prominently. It is impressed on us on considering this record that much, probably the most, of this degeneration is preventable, and it is our duty as medical men to aid and to insist on its prevention.

Tuberculosis.

The second great cause of rejection is one infective disease—tuberculosis. We know that its incidence throughout the country is great, but the reports seem to show that the occurrence even of recognizable cases is not sufficiently indicated in the official records. In London, from January to October, 1918, 160,545 examinations were made. Of these, 5,238, or 3.1 per cent., were placed in Grades 3 and 4, owing to tuberculosis; 2.6 per cent. of these suffered from tuberculosis of the lungs. It is by no means comforting to have it pointed out to us that numbers of these cases occurred amongst barbers, hair-dressers, and others brought into close association with their fellows. Certain very noticeable reports are made from Liverpool with reference to the incidence of tuberculosis even in its contagious and infectious stages. Out of 66,000 examinations from November 1st, 1917, to July 31st, 1918, about 1.75 per cent. were rejected on account of tuberculosis. This work was done in close association with the medical officer of health and his officials. The striking fact is brought out that of 277 cases proved to be tuberculous, 218, or 78 per cent., were previously unknown to the health authorities. And so the story of tuberculosis and its incidence is remarked on by medical examiner after medical examiner. Who can doubt that this widespread incidence is unnecessary? It has its origin in the close crowding of our population, the insanitary conditions produced by back-to-back houses, ill aired courts, and ill ventilated dwellings in our cities, villages and rural districts. These are pointed out as nurseries of the infection. It is clearly our duty to keep rousing the attention of the people and of the local and municipal authorities to the occurrence of a disease which is contagious, infectious, and preventable.

Disease and Degeneration of the Heart and Blood Vessels.

The third great cause of unfitness and of rejection is noted as diseases and degeneration of the heart and blood vessels. Included in this category are the various forms of heart disease—pericardial, myocardial and valvular—due to rheumatic inflammation of the heart. In such cases we have to deal with a fairly well recognized type of infection, but there can be little doubt that many individuals who show failure of the heart and of the circulation have suffered from other general infections not so obvious as that of rheumatic fever. As men become older the results of strain will show themselves much more readily on a cardio-vascular system only slightly damaged by infective process occurring in early life. This appears to be the cause of the fact that on looking over the report of the examinations of the older men, especially between 40 and 50, a great proportion of disability appears to be due to disease of the heart and of the blood vessels. In the London region, of 160,545 examinations, 15,947 were placed in Grade 3 or Grade 4 on account of heart affections alone, no less than 9.9 per cent.

One of the most important of the forms of vascular degeneration causing disability is venous varix in some form. Varicosity of the veins of the lower extremities to an extent sufficient to disable or to be dangerous was found to be very common, especially in the industrial districts and among the older men. The amount of this form of varix was surprising, even to experienced medical men. From the south-eastern region of Lancashire it is reported on the examination of the older men that "varicose veins are extraordinarily common, and a large proportion of them are of extraordinary severity, like tortuous knotted ropes extending up the whole leg and thigh. Including varicocele and piles, quite a quarter of the men suffered from varix."

I mention these three great causes of disability on account of their frequency, but also to draw attention to the fact that to a very large extent they are preventable. If the nation could be so educated that the children are better cared for, that the adolescents and the young men are not driven to hard work beyond their powers, and that the adult worker is protected from the more evil consequences of his labour by securing proper conditions in the field and in the workshop, a very large proportion of these disabilities would be mitigated or would disappear.

Oxford and Bucks: Some Figures and their Lessons.

May I now draw attention more particularly to the condition of this district, most familiar to the members of my audience, so that we may have a tangible idea of the state of the people of whom we are in medical charge. For this purpose the authorities of the Ministry of Pensions, in whose charge the medical records of the Ministry of National Service now remain, have very kindly furnished me with more detailed information than has yet been published. Among other documents, I lay before this conference the complete analysis of the causes of rejection during the year under review, arranged according to occupations. This information is not yet available for other parts of the country, with the exception of London and the South-Eastern Region, and we are much indebted to the Ministry for the trouble they have taken to get out these figures specially so that I may have the opportunity of placing them before you.

In the Eastern Region of England, including Oxfordshire and Buckinghamshire, 216,012 examinations were made, with the following results:

Grade 1	68,604 (31.8%)
Grade 2	54,360 (25.1%)
Grade 3	67,492 (31.3%)
Grade 4	25,556 (11.8%)

These figures, estimated by Keith's standard, give an index of fitness of 68.9 per cent., and show a deficit from the standard fitness of 20.4 per cent., the deficit on the whole country being 18.4 per cent. It will be seen, therefore, that the Eastern Region not only falls far below the standard of fitness that we should have the right to expect, but is considerably below the average of Great Britain. I have taken out certain groups from the analysis of the whole of the rejections to give some indication of the effects of the three great causes of physical unfitness in our own district.

In the area of Oxfordshire and Buckinghamshire 3,689 were rejected as being unfit for service during the year under review. Of these:

Poor physique and the presence of physical defects account for	422
Tuberculosis for	300
Diseases of the heart and pericardium, the arteries and veins for not less than	827

Bearing in mind our people in Oxford and Bucks these results certainly are arresting, and give cause for grave consideration. On looking over the reports of the medical officers to obtain indications as to the reason of so great and so severe an amount of disability, I note first this interesting criticism respecting an agricultural population:

"The agriculturalist on the whole is a good type of recruit, but in Wales may be divided into men engaged on arable land and dairy farming and those on pasture farms. The former does not give a very good type of recruit, as the men engaged in this work suffer to a large extent from bad feet and rheumatism. Those on pasturage farms generally in the mountainous districts, engaged for the most part in shepherding, are a splendid body of men and are usually sound."

The Commissioner of Medical Services for the Eastern Region is a medical officer of wide experience. For many

years as an officer of the Indian Medical Service he had the opportunity of observing the recruits in India for the Indian armies. Comparing Indian recruits with some of those seen by him, he makes the remark: "The prevalence of disease and defective physique among the young men of Great Britain presents a shocking contrast." The Deputy Commissioner of Medical Services, dealing with Buckinghamshire and stationed at Aylesbury, states:

"The chief feature of this half-year has been the examination of the older men, that is, of 43 to 51, of whom there were 1,674. That only 6 per cent. of these men should prove fit for Grade 1 was a sorry result." "Bucks is essentially an agricultural county, the young farm labourer of 18 to 21 is a splendid specimen as a rule, but the same class of man at 40 instead of being in his prime is middle aged, with such disabilities as myalgia, arthritis, varicose veins, hernia, and flat-feet, all pointing to much standing, walking, exposure and hard manual labour." "Next to agriculture come chair-making and the boot trade." "The conditions in the latter need improving; much of the work is done in small, close, ill-ventilated rooms, with the result that the men of Chesham are, generally speaking, of poor physique and weaklings." "Very different were the men from the important London and North-Western Works at Wolverton; there the men and boys are medically examined before admission, and the work is done under satisfactory conditions, with the result that by far the majority were fit for Grade 1."

His colleague, a medical man of long experience in the two counties, stationed at Oxford and dealing with Oxfordshire, remarks on the poor physique of agriculturists in his area. He states: "In my opinion the homes of the agricultural working class are a disgrace to a civilized country. In pre-war days agricultural wages in Oxfordshire were as low as twelve shillings a week."

These criticisms are made by men of experience brought face to face with the results of degeneration and disease in our adult population. I have remarked on another occasion how depressing is the sight of so much suffering and disease when seen in bulk, and the influence that it has on the judgement of those who have to witness it. It is no wonder that the criticisms made are occasionally unduly weighted by the evidence of what they have seen in such concentrated form, but there can be no doubt in our minds of the existence of a large mass of deficiency, and equally that much of it is avoidable.

The Necessity of Obtaining "a Comparative Estimate."

As an important preliminary to the steps that must be taken to remedy the defects in the physical condition of the nation disclosed by the report, I would again urge the advantage of a continuous record of the health of our people. This suggestion is not a new one, although it seems to give a shock of novelty to some who have not thought of the great advantages that would be gained. You will recollect that the Interdepartmental Committee of 1904 were asked to furnish the Government and the nation at large with periodical data for an accurate comparative estimate of the health and physique of the people. There can be no doubt in any one's mind of the advisability of such a record. If we had periodical information of the health of our people we would soon be able to recognize the chief influences which produce physical degeneration, and to identify and to understand more fully the causes and early signs of disease. The objection raised to such a course is its presumed impracticability. This difficulty, I believe, is greatly exaggerated. If the benefits of the course were explained and understood such objections as do exist to the periodical examinations of our population would be overcome.

But we have already a mass of information from which instruction in these matters can be obtained. I have a list before me—a list of no fewer than twelve kinds of Government departments and Corporations engaged in examining men, women and children simply with the purpose of ascertaining their physical fitness, often with no reference to treatment. The number of observations made by medical men for this purpose must be many hundreds of thousands every year. They are made in the case of many individuals repeatedly from the date that they enter an elementary school up to the time of commencing their life's work, and at various periods afterwards. If these observations were collected and collated by methods similar to those used in the report with which I have been dealing, the information so greatly to be desired would be at the disposal of the country without great departure from custom.

If the time permitted I should like to refer to the interesting plan adopted for the medical inspection of the school children by the practitioners of Oxfordshire, and the arrangements made for obtaining a continuous record of each individual child. It is on such lines as those marked out in the neighbouring county that the "periodical data for an accurate comparative estimate of the health and physique of the people" will be obtained.

The Land, the Folk, their Work.

Coming from London to-day and travelling into your beautiful county, I could not fail to see the nature of the land. Leaving the great wilderness of houses I saw the characteristic features of the lower London tertiary formations, its clays and gravels, and the soil they produce; then the upper cretaceous rocks distinguished by the graceful outlines of the Chilterns; passing deeper into the secondary formation, the clays, sands and limestones of mesozoic time which give the characteristic features to mid England. Overlying were the various drifts of gravel, sand and clay masking, and sometimes softening, the basal geological features, but giving fertility and permitting of the cultivation of the land. On this foundation I saw the hills, the river valleys, the meadows, the plains of sand and fertile clay which characterize your counties and make them among the most pleasant parts of England to look upon.

Then I thought of your people, and my mind went back to the days before the Romans when your country was inhabited by races speaking the Celtic tongues, but who had their origin in ages long preceding the Celtic infiltration. Have these races left their mark on the population of your district? It is true that we read under the date 571 that Cuthwulf, brother of Ceawlin, again marched northward and "fought against the Welsh at Bedford, and took four towns, Lenbury, Aylesbury, Benesington and Ensham," and we can imagine the men of Wessex meeting the East and Middle Saxons just in this place, where your town is built on a rocky island rising from the fertile valley. It must have been a desirable place of habitation from remotest time. Historians, I think, look upon your district as one of the most thoroughly Saxonized in England, and the language and your placenames give evidence of this. But is it not more than probable that the invading West and East Saxons and their kindred from the north were not in overwhelming numbers, and that they mixed with the older races of the land? Without disregarding the Saxon tongue the older influences no doubt exist both in race and disposition, and your people are of the characteristic mixed stock of the greater part of our country, and possess their full share of its enduring and virile characteristics. It is only recently that the railroad has opened up the more secret parts of your counties, and the racial stock formed at the time of the immigration of the West Saxon men has remained almost pure. More recently, on your eastern and southern borders you had the overflow from London, but these newcomers are the more vigorous members of the racial swarms hiving round the lower Thames, and should not depress your native healthy stock.

Thinking of the occupations of your folk, I note that agriculture in various forms absorbs a large proportion. Your industrial centres are not large, and your workers are engaged in industries which should be neither unduly fatiguing nor unhealthy. The stranger who has the opportunity of walking on the Chilterns through the great beech woods down to the busy little towns in the river valleys is persuaded that the lot of the worker has fallen in a pleasant land. He is much in the open air; he has to care for the great woods and noble trees whose timber forms the material in his workshop.

Thus the country, your people, and their occupations are good beyond the average, and yet the records of our physical census show results not only far below what we have a reasonable right to expect, but very definitely below the average of the rest of the country. I ask you to meditate on the reasons for this. No doubt many will occur to your minds; indeed, the explanations that I have quoted from the evidence of our medical colleagues suggest many of the causes, and of these causes and reasons there are few that are not controllable by the medical profession as a whole and each of us in our individual sphere of work.

EIGHTY-EIGHTH ANNUAL MEETING
OF THE
British Medical Association.

Held at Cambridge, June 30th to July 2nd.

PROCEEDINGS OF SECTIONS.

SECTION OF ELECTRO-THERAPEUTICS.

ALFRED ERNEST BARCLAY, M.D., President.

THE PLACE OF THE RADIOLOGIST IN MEDICINE.

INTRODUCTORY REMARKS BY THE PRESIDENT.

THERE is something particularly appropriate in the fact that, after the lapse of six years, this Section should meet in Cambridge—a university which has stood through the centuries of change as the emblem of that which is highest and best in education. Yet, with all its traditions, with all its conservatism, it would be hard to find a wider outlook in scientific thought at the present time than in this University of Cambridge, and we, as representing the Cinderella of the branches of medical science, wish to acknowledge our debt to those who so readily opened the doors to the suggestion of a diploma in radiology and electrology.

In the public mind the possession of a medical degree of any kind argues that the possessor is qualified to practise in any branch of medicine, no matter how specialized; and yet we all know how completely out of touch any medical man with the usual qualifications must be with the rapid expansion of knowledge in so many different directions. Specialism is the feature of the present day, for no man can possibly be *au fait* with all the branches of medicine, and it must be admitted that there are medical men who pose as specialists in various branches in which they hold no particular qualifications to practise beyond their own desire to be regarded as experts. There is nothing whatever to prevent any man who possesses a registered qualification from becoming a specialist in any branch, and there are various routes that can be followed. (1) As already suggested, he may by self-assertion, the purchase of special apparatus, and so forth, work his way into the position of a specialist; and he may possibly succeed both in the eyes of the public and of his brethren. (2) He may go, as in the olden days, to serve with some master of his art, working as his apprentice or clinical assistant. (3) He may undergo a regularly ordered course of training in his art—that is, the method of education now universal in medicine, and which many years ago replaced the older and less satisfactory apprenticeship method.

I will just touch on these three methods of entry into specialist practice as applied to radiology and electrology.

1. Twenty-four years ago every medical man stood on the same plane as regards the application of *x* rays, and those who knew anything of other forms of electrical methods in medicine were few and far between, thanks very largely to the charlatanism of the qualified and unqualified practitioners who had exploited physical agencies. The medical men who commenced *x*-ray work in those days had no option but to learn as best they could, putting in their own apparatus and carving out their own path by a series of more or less costly experiments—sometimes costly also for the patients.

2. To-day such a course is quite unnecessary, for there is hardly a hospital that is not equipped with a more or less efficient department, supervised by a more or less qualified medical man. I say advisedly "more or less qualified," for it has been a matter of chance whether the man appointed as the head of a department knew anything about the subject to start with, and whether he took the trouble to keep himself and his department up to date in the rapid progress of a new development in medicine.

Those who followed the earliest pioneers had the opportunities of going to the hospitals where these men worked, and became more or less apprenticed. It is to this class that most of the present-day radiologists belong. There was, however, nothing to prevent a man from starting as a radiological or electrical specialist as soon as he knew one end of an *x*-ray tube from the other, and there are men whose mental equipment when they started was, to say the least, meagre, and who tried to make up for it by bluff and the costly showiness of their apparatus. I do not know that we can blame some of these men, for they did not realize the responsibilities they were so lightly undertaking; moreover, no concerted effort had been made by the established radiologists to enlighten the medical public or to establish organized teaching. Little wonder, then, that men who had been taking radiographs in the army thought that they could at once come home and turn their knowledge of military *x*-ray work into useful channels, taking up civil radiology and the attitude of specialists on knowledge which is the barest outline of a fragment of what will be required of the specialist in civil practice. Some have equipped themselves with perhaps a month's work in some well ordered department, but to-day there is no reason why any man should start practice without proper mental equipment and experience.

3. Such haphazard methods of equipping the specialist as I have suggested are no longer either necessary or tolerable in an organized medical profession. Because a medical man is qualified to practise the arts of medicine embraced in the medical curriculum it does not follow that he is qualified to open an abdomen, devise and criticize a sanitary scheme, or tackle the problems of any of the other branches of medicine and surgery that have now become so highly technical and specialized. In surgery no man can obtain an appointment of any surgical importance without the F.R.C.S., or a public health appointment without the D.P.H., etc; this has followed as a natural sequence.

The Diploma in Radiology and Electrology.

For a long time it has been felt that exactly the same conditions obtained in radiology as in the other specialized branches of medicine, but there was no qualification and no systematic course of training available—there was no diploma, no degree, nothing to "hall-mark" a man. In 1916, in the midst of the war pressure, steps were taken to establish a definite curriculum and a diploma which would be *the* standard qualification which must be held by all who sought to obtain radiological appointments. We turned to Cambridge, and in this old university the need of such a diploma and its value in the medical world was at once grasped. There was no need of arguments, and to-day we owe it to the receptive and broad-minded spirit of this university that the diploma in radiology and electrology is established. How great was the need of this diploma was hardly realized, but an entry of almost thirty for the first examination this month, after six months of a most strenuous course of training, and more than a dozen already started for the next examination, shows that the aims of the originators of the scheme were achieved none too soon. In fact, we know of many men who could not wait and have gone into practice straight from the army. I hope, for their own and for their patients' sakes, as well as for the status of radiology, that each one of them will make whatever sacrifice is necessary in order to gain this diploma, without which they will certainly not be able to obtain any appointment as soon as the value and standard of the diploma are known.

From this time onwards it should be impossible for a hospital to appoint a man as radiologist or electrotherapeutist who is not qualified for the work he undertakes; but it must never be forgotten that, as in other branches of medicine, no examination can give the personality which, coupled with knowledge, makes the consultant. Essentially the radiologist is a consultant; he is, of course, responsible for and knows all about the technical work of his department—the making of satisfactory radiographs, the fluoroscopic examinations, the *x*-ray and electrical treatment, etc., but his main function is that of adviser. It is for him and him only to prescribe the treatment in his department. Also he knows, or should know, the interpretation of *x*-ray shadows better than anyone else, and he must report on all cases; whether a surgeon or physician accepts his report is not of the slightest importance, for if the radiologist knows his work, the surgeons and physicians will in time gladly

accept his interpretations, which, in the nature of things, are based on a far wider experience than theirs.

Of course the radiologist is not infallible, any more than the surgeon or physician, but if he learns from his mistakes and takes care to know of his mistakes, there is no reason why he should make the same mistake twice; the *post-mortem* room and the operating theatre are quite as instructive to the radiologist as to the physician. In short, the responsibility for the opinion of an *x*-ray examination rests on the radiologist; if the surgeon or physician cares to make his own interpretation of *x*-ray shadows, there is no reason why he should not do so, but the responsibility lies at his own door. My own experience in this respect is that I am often asked to take far greater responsibility in diagnosis than is justifiable, for the radiologist sees but one side of the case, and in a very large number of instances it is only by balancing the physical and *x*-ray examination with the clinical history and condition of the patient that a judicial and fair estimate can be given.

Sometimes, as in the presence of a foreign body, the radiologist's word is the first and last word in the diagnosis, but the surgeon is not justified in asking the radiologist whether the foreign body should be removed or not, neither is the radiologist, as such, justified in giving his opinion on the point. This is, of course, a very crude example of my contention that the radiologist can only give expert opinion in so far as his information is gained from his *x*-ray examination. The point crops up continually, especially in chest and abdominal examinations, when one is asked to express opinions which could only be arrived at by a consideration of all the available information. Private patients and general practitioners are especially to be side-tracked in this respect. My own unfailing method is to say that I have not yet examined the plates and that I will report when I have had the opportunity of examining them and comparing them with my notes, etc. A written report may mean additional work, but it gives the radiologist full opportunity of confining his opinion to such things as he has learned from his examination. I am not for one moment suggesting that the radiologist should shirk responsibility, but I do hold, and hold very strongly, that his expert opinion must be confined to the limits of his speciality. Within these limits he must not only accept but claim full responsibility; outside these limits, if he cares to express any opinion, he must make it clear that it is not the opinion of an expert. I hold that it is on these lines that the radiologist must base his relations to his colleagues as regards diagnostic work.

Past Mistakes.

The qualifications necessary for this branch of specialism are very diverse, and all through the war the need of competent men was very apparent; the tragedies of inefficient localizations, even to the end of the war, are fresh in your minds, and this is only one side of a specialism which has as many outlooks as there are branches of medicine and surgery. It will be many years before the medical public as a whole realizes the knowledge and experience that go to the training of the specialist, and in the meantime unqualified practice flourishes, while the legitimate practitioner has to think twice before he charges such fees as his ordinary medical and his specialist training warrant.

It is all very well for a radiologist to tell his brethren how they should behave to him, and, in simple fairness, one must put the other side of the picture. There must necessarily be many men practising as specialists who have not had the requisite training, for the diploma course has only become available this year. In making hospital appointments in the past there was no standard to guide those responsible as to who was competent to take charge, and it was entirely a matter of luck whether the man appointed knew anything of his work and was particularly adapted for it. Any man would do to look after an unimportant new development that was housed in some old cellar or odd hole that happened to be available, and it is evident that those who were responsible had not the foresight to see the possibilities of the subject. Great blame attaches to many of these appointments, and the responsibility for the appallingly bad *x*-ray and electrical work that is found in some hospitals rests with those who appointed the wrong man as medical officer. Only too often men were nominated whose special qualifications were sketchy in the extreme. In other words, men were placed in potentially responsible consultant posts who were not qualified for them. One cannot blame the men for taking posts in this way, but one can and does blame those in authority, particularly the consultant surgeons who had not the foresight to see that radiology and electrology would become the greatest of all the special branches on which they would have to depend, and that they must nominate a man who would eventually be their colleague, even though he was kept in his place for a year or two by making him a salaried officer on perhaps £100 a year. The results of this were deplorable, especially to the surgical work of these hospitals, for, as a natural consequence, the radiology, on which surgery and medicine had become increasingly dependent, was precisely on the £100 a year plane. And the man placed in charge has been treated by his colleagues, and consequently by the general practitioner, on this £100 a year basis. If all the men so appointed in this haphazard manner did not "make good," it is hardly to be wondered at, especially when one knows that in quite a number of instances the surgeons and physicians who advised their boards to make the appointments ignored their own nominee, and let him struggle for a living as best he could while they sent all their paying private work to others, as often as not to laymen. Team work is essential these days, and the radiologist is one of the essential workers in a team. If he has not the necessary apparatus, because of lack of support, his work is likely to be the weakest link in the chain.

Yes, there are plenty of charges that can be laid at the doors of the radiologist and electro-therapeutist. It should not be forgotten, however, that at the present time he is almost entirely self-educated, and more often sinned against than sinning.

Future Opportunities.

There is one relationship of the radiologist to his colleagues that I must just touch on. His department is full of intensely interesting work; it is like a profusely illustrated book. His illustrations come automatically from all departments of his hospital and from his private practice, and the waste of the superabundant material in every *x*-ray department is a tragedy. The *x*-ray department of a hospital is a centre to which a very large proportion of cases must necessarily be referred, and I hold that the radiologist should make it his business to see that there is as little waste of material as possible. For instance, if one of his colleagues is working on osteitis fibrosa or other rare disease, he should keep that man informed of all cases that come to the hospital. In fact, he should make his department a bureau for the distribution of information, supplying his colleagues with all the material he has available from his unique position as a link in so many diagnostic chains. His department should be lifted out of its cellar and brought into a central position, where each and all of his colleagues are always welcome to see the work and discuss their own and their colleagues' cases. Such a department has the opportunity of once more linking up the scattered units of a hospital, which tend to get further and further away from each other, each absorbed in itself and not knowing what goes on in other units.

The radiologist has, I believe, a great opportunity in this respect, and, if he can get a suitable department built in a central position, he should be able to do something to break down the barriers that have sprung up in the big hospitals, by making his department a social as well as a scientific centre, a common meeting ground for men from all parts of the hospital. Such a department would have a very marked stimulating effect on the scientific work of the hospital, and would give members of the staff a chance of meeting each other such as they have never had since the old days when the whole staff of the hospital was crowded in inadequate quarters. There is something to be said for the old days when circumstances forced medical men to see a great deal of each other's work.

In the new era opened up by the granting of the diploma by this university every appointment will be held by men and women who have had greater advantages than we, and a higher standard than has been possible in the past will be expected and demanded of them. The future holds possibilities for development that demand the best workers. It is no stereotyped branch, and every year new side-paths

open out that should tempt any man who loves pioneer work. The fascination of discovery is great and as yet we are only on the fringe of whole tracts of uncharted by-ways that call for the sharp axe of the keen investigator, the open mind and quick perception of the prospector who can stake out a claim and "make good" in one of the richest fields of research that has ever been thrown open to those of us who have chosen to follow the study of life and death.

DISCUSSION ON DIAGNOSIS AND TREATMENT OF PARALYSIS CAUSED BY NERVE INJURY.

OPENING PAPERS.

THE PLACE OF ELECTRICITY IN THE DIAGNOSIS AND TREATMENT OF NERVE INJURIES.

BY

H. S. SOUTTAR, C.B.E., F.R.C.S.Eng., M.Ch.Oxon.,

Assistant Surgeon and Director of Surgical Unit, London Hospital.

DURING the war, owing to the illness of a colleague, it fell to my lot to be responsible for the large Physical Treatment Department at the British Red Cross Hospital, Netley, for more than six months, and though in that time it was impossible for me to acquire more than a superficial knowledge of electro-therapeutics, I certainly gained an insight into its aims and its difficulties that would otherwise have been impossible. If, as a surgeon, I had ever been impatient of the slow progress made by cases after operation and had been inclined to attribute it to defects in after-treatment, I now had it brought home that some of the difficulties in after-treatment might even be due to the surgeon's own want of foresight.

In the care of a limb in which a nerve has been severed there are many considerations other than those that appear on the surface. The inevitable paralysis of a certain group of muscles carries with it a whole train of consequences, many of which are by no means inevitable.

Leaving on one side for the moment the muscles directly affected, the loss of the normal range of movement will lead to the formation of adhesions between other muscles, around tendons, and within joints. The limb may readily fall into positions of deformity which give rise to the stretching of muscles and of ligaments, the skin itself will suffer from disuse, and the limb will suffer from its corresponding loss of excretory power. It is therefore evident that in estimating the value of any one method of treatment we must consider the limb as a whole, and must not let our vision be bounded by the narrower field of the small group of muscles which may actually be paralysed.

Before considering, then, the place of electricity in the diagnosis and treatment of nerve injuries, I would lay stress on the great value of a varied course, which may include such diverse methods as massage, whirlpool baths, and Zander exercises, each playing its part in the prevention or resolution of some of the secondary results of the injury. A further advantage of such a course is the great degree to which it facilitates the application of electrical methods. The skin can be kept soft and moist, and the current will no longer be checked by a dry and resistant membrane, or diffused by underlying oedema. The paralysed muscles will no longer be asked to contract against a barrier of adhesions, or to flex joints stiff from disuse. The improvement in the blood supply of the limb will save these muscles from any risk of injury from the collection of waste products, and will bring to them a supply of food such as is demanded by the work they may have been forced to do.

When, then, I speak of the use of electricity in the diagnosis and treatment of paralysed muscles, it is to such a limb, and to such a limb alone, that I refer.

In the case of an injury of a peripheral nerve, the use of electrical methods, merely to discover whether the nerve is divided or not, is of no great interest. It is when we are approaching the period of recovery that the importance of refined methods becomes pronounced; but even here I am inclined to think that it is the eye and hand of the expert rather than the actual method which he employs that counts. After all the work that has been done, and all that has been written on the subject, it still remains true that the subtle change from slow to quick response, with all that it means of recovered nerve and awakening muscle, is as evident to the trained eye, whether it be produced by a simple galvanic set or by some elaborate electrical device. This change is, to my mind, by far the most important index of recovery with which we are acquainted. It precedes the return of voluntary power and of faradic response by a period which may vary from two or three weeks to several months; it invariably appears if recovery of function is ultimately to occur, and is a sure indication that a certain degree of recovery has already taken place. The actual response may be observed either in the muscle itself or in its tendon. Observation of the resulting movement of the limb is apt to lead to erroneous conclusions. Nothing is more likely to lead to a wrong diagnosis of recovery than observation of movements of a limb, almost all of which are produced by composite groups of muscles; this is especially true in the early stages of recovery, when the response of the affected muscles to any form of stimulus is feeble. Time after time we have thought that voluntary power had at last returned, or that a faradic response had been obtained, only to find on applying the more stringent galvanic test that we had been deceived, and that the typical slow wave of contraction was there to prove it. If the presence of a quickened response is an encouragement to be eagerly looked for, its absence should be a check to the undue optimism which has done so much to darken our knowledge of the results of nerve suture.

As regards the use of electricity in the treatment of paralysed muscles, I feel that it would be pure presumption on my part to express any opinion upon the various ways in which it may be applied. But I may be allowed to offer a few observations on the objects we have in view in applying electrical methods to treatment, and on the results we may hope to obtain.

Although I know that other views are held, I think that most will agree that in the application of electricity our primary object is to evoke contractions in the paralysed muscle. By doing so we force it to fulfil its normal function, in however diminished a degree, and this, in our universal experience, is essential for the prevention of atrophy in any tissue. A disused limb will shrink, even its bones will lose their lime salts, and its skin will become glossy and thin. A disused loop of intestine will atrophy till it is little more than a fibrous cord, though its blood and nerve supply are absolutely normal. A disused eye may become blind. The tissues require for their nutrition something more than the supply of food, even something more than perfect innervation. They must work.

I do not for a moment say that massage is of no value in the nutrition of a paralysed muscle. It is of the utmost value, for it can ensure an adequate supply of food, and the effective removal of waste products, and can assist in many other ways. Nor have I thrown over my old friend and ally, the whirlpool bath. It, too, has a field of action, in which it easily holds the first place, and perhaps not the least of its benefits lies in its wonderful power of preparing the limb for the masseuse and the electrician. But I maintain that electrical stimulation can do for the muscle something quite out of the reach of either of these methods.

Although the secret of muscle power is still undiscovered and we as yet know nothing of the mechanism of the simplest movements, certain broad facts about muscular contractions are obvious. At their basis must lie some molecular change in the material of which the muscle tissue is composed; this change must produce a mechanical change in each of the minute elements forming the tissue; and these small mechanical changes in the elements must be integrated into the gross contraction observed. A whole series of changes—molecular, microscopic, and massive—go to form a contraction, and these changes can only occur when the muscle contracts. In no other way can they conceivably be produced. The prima facie evidence of the value of contractions in the treatment of paralysed muscles is therefore overwhelming, and it would require the strongest practical evidence of their uselessness to justify us in ignoring them.

But the practical experience of those who have used electrical methods largely is overwhelmingly in support of the value of contractions, and there are even some who hold that if they can be evoked no other treatment is required. Personally, they seem to me to form a valuable climax in a system of treatment, forcing the very molecules

of the muscle to bestir themselves and to make use of the supplies of food which a stimulated circulation has brought to their doors.

If, however, electrical treatment is to be really effective, there is one condition which must not be overlooked: it must be remembered that the results we have just seen apply only to those fibres which contract, and for the muscle as a whole to receive the same benefit it must be made to contract as a whole; this it is often exceedingly difficult to obtain. It is only too common for the operator to be satisfied with the twitch of a few superficial fibres, which merely disturbs the skin, whilst the great bulk of the muscle lies inert below. Obviously the ideal means of stimulation would be the passage through the whole limb of a current which would stimulate the paralysed muscles whilst leaving the intact muscles undisturbed. The researches of Lapicque and of Turrell have brought us within measurable distance of such an ideal, although I do not think that we can yet regard the problem as solved. When its complete solution is achieved, a new era will have dawned in the treatment of paralysis.

I think, then, that the primary object of the application of electricity to a paralysed limb should be the production of contractions in the paralysed muscles, and I feel certain that the surest direction of progress lies in the development of special forms of current for this purpose. At present we have the ordinary galvanic make and break, the same current modified by the introduction of a condenser, and surging galvanic currents. The first is the method of all-round utility, but it has the disadvantage that it must be applied locally, as otherwise an overpowering contraction of the healthy muscles would be produced, and that it is difficult to obtain by its means the deep effect which is so essential for success. The other two methods can, in skilled hands, give brilliant results, but they require a degree of attention to detail and a skill in adjustment and application which only a few can supply. The discovery of some simple means by which the contraction of every fibre of a paralysed muscle could with certainty be obtained would give a powerful impetus to treatment, and there are few objects more worthy of research.

There is a very prevalent tradition that the continued stimulation of paralysed muscles is attended with a danger of producing fatigue, and that the results of this may be so serious as even to outweigh all the good that the exercise might have done. Those who hold this view can scarcely have realized the extreme feebleness of the strongest contractions that we can obtain when compared with voluntary effort, and yet it is well known that voluntary effort, even if carried to the stage of utter exhaustion, is incapable of producing any considerable degree of fatigue in the muscle itself, so well is it protected by the nervous system. As a matter of fact my friend Major Cooper has put the matter to a direct test: he has found that after 600 contractions in fifteen minutes a paralysed muscle showed no evidence of fatigue at all. This certainly seems to indicate that we are usually far too lenient in our treatment, and although, as we all realize, a due period of relaxation between the contractions is essential, we might evidently exercise each muscle for a far longer period than is usual with great advantage.

So far I have only spoken of currents which are capable of producing contractions in paralysed muscles, but I should like to devote a few moments to the consideration of currents which have not this power, and to ask the question, Has a faradic current any place in the treatment of a paralysed limb? I feel convinced that it has. In the first place it can be used to exercise the normal muscles, to free them from adhesions, and to restore them to their full vigour. And it must be remembered that these muscles whose nerve supply is intact, are often capable of compensating to a quite remarkable degree for the loss of those whose nerve supply is destroyed. The supinator longus, for example, can do the work of the brachialis and biceps in flexing the elbow, and the scapular muscles may be able to replace the deltoid in abducting the shoulder. The exercise of these muscles will help the general circulation of the limb, it will protect the tendons from adhesions, and it will keep the joints free, and the skin supple and healthy. Apart from its indirect action through the muscles, it is probable that a faradic current has a direct stimulating action upon the circulation, either upon the vessels themselves, or through the sympathetic system, and in this way it may have a direct action upon the vitality of the limb as a whole.

It has recently occurred to me that a faradic current, stimulating the muscles antagonistic to those which are paralysed, might very probably have an effect far more subtle than those to which I have referred, which would give it a very real place in the treatment of nerve injuries. It is true that we have no evidence to show that the mere passage of a current through a limb has any effect on the growth of a divided nerve. But there is every reason to suppose that the rate of growth of a divided nerve is influenced by the activity of the cell from which it arises, and what better means could be found of stimulating the anterior horn cell than the production of the physiological reflex arising from the contraction of the antagonistic muscle group? The possibility is certainly worth considering, and it at least shows the extreme complexity of the phenomena with which we have to deal, and the caution which we should exercise before condemning any form of treatment, however bizarre it may at first appear to be.

Part of the importance and the fascination of nerve injuries lie in the common ground which they afford for the physiologist, the electro-therapeutist, and the surgeon. Such common points of contact are worthy of our closest attention, of our most assiduous cultivation, for these are the starting-points from which the future advances of science will be made. I feel that it is because you realize this that you have done me, a surgeon, the honour of asking me to open this discussion. To realize it myself adds to my appreciation of your kindness, and of the honour you have done me.

THE VALUE OF ELECTRICAL TESTING OF NERVES AT OPERATION.

BY

NOEL H. M. BURKE, M.R.C.S., L.R.C.P.,

Late Physician-in-Charge, Electrical Department, Horton War Hospital.

I PROPOSE to deal with one aspect of the electrical diagnosis of peripheral nerve injuries—namely, the examination that can be made when a nerve trunk has been exposed by the surgeon at operation. Many people have applied electrical stimuli in these conditions, but I do not gather, from the few notes that have appeared, that there has been any systematic study of the reactions obtained, such as would lead to a clear idea of the value of the findings, positive or negative, and the limitations of the method. If I may say so, the proceeding has been rather empirical and happy-go-lucky.

I was fortunate in being able to test rather carefully the electrical conditions in a series of about eighty cases, during the earlier years of the war, and my observations were conducted with the object of learning something about the nerves, rather than that of being of immediate help to the surgeon. I believe that a study of the results does indicate what conclusions are justified by the evidence procured by such stimulation.

Stimulation of a nerve trunk gives evidence of two of its properties—excitability and conductivity. We know that a localized lesion of a nerve trunk produces no change in the nerve for more than a very short distance centralwards. Stimulation above the lesion will therefore provide evidence of the conductivity of the nerve through the injured area and onwards to the muscle supplied. It is at and below the lesion that changes are to be expected; stimulation below the injury will therefore be a test of excitability as well as conductivity. The latter function has already been explored by the central stimulation, so that peripheral stimulation may be regarded as a test of the excitability of the peripheral portion of the nerve.

In my experiments the tests were made by means of a small sterilizable bipolar electrode—actually a telephone plug—connected to a Lewis Jones coil. The pins of the electrode were applied to the nerve above and below the injury before any dissection had been attempted in the damaged area. The tests were repeated when dissection from fibrous adhesions was complete. The resulting contractions were noted and classified.

Without going into details I may say that the following general observations were made:

There were 25 cases of complete division of a nerve

13 of nearly complete division, 2 of very slight division, and 42 of involvement in scar tissue without macroscopic evidence of division of fibres. No case of complete division showed any sign of excitability or conductivity. I have heard that someone has reported a case with a contrary finding, which seems very difficult to accept. However, as I have not seen the paper I cannot fairly criticize the statement.

In the scar cases, of which a few may really have been partial divisions, 73 per cent. were found to have preserved some conducting power, and 64 per cent. were still excitable by stimuli before dissection of scar tissue. The interesting thing was that a number of these showed a definite improvement in both functions when tested immediately after neurolysis.

In the partial divisions contractions were fairly often obtained. Here one often found diminution of response after dissection, and the possibility arises of fatigue effects, due to handling and repeated stimulation.

The criticism of the value of response in these division cases is that it is only with a fairly sound nerve that anything like a general contraction of a whole muscle group is seen. Mostly one gets only a contraction of one or two larger muscles. Consequently, when a contraction of this sort is produced, it does not necessarily mean that no fibres have been divided.

The conclusions I draw from my experience of these cases are:

1. Conductivity is conclusive evidence of physiological continuity of nerve fibres.
2. Excitability is also conclusive evidence of physiological continuity of nerve fibres.
3. An immediate improvement in conductivity or excitability after neurolysis is suggestive of very slight compression, possibly chemical nerve block, and justifies a very good prognosis.
4. Absence of conductivity and excitability, even after neurolysis, indicates a fairly severe nerve disturbance, but is not proof of complete division.
5. All cases should be tested in this way, because the information is worth having, and can materially help the surgeon in his decision.

CONDENSER TESTS IN THE DIAGNOSIS AND PROGNOSIS OF NERVE INJURIES.

BY

CECIL WORSTER-DROUGHT, M.A., M.D.Cantab.,

Neurologist, Out-patient Department, Bethlem Royal Hospital; late Consulting Neurologist, Woolwich Military District.

THE following observations are based upon experiences with some 2,000 cases of injury to nerves of the upper and lower limbs seen while I was acting as neurologist to the Woolwich Military District from 1916 to 1919. At first I used a condenser set merely as a secondary test to faradism and galvanism, but very soon becoming impressed with its value, I relied almost exclusively upon the condenser set, relegating faradic and galvanic reactions to a subsidiary position.

Mr. Souttar has remarked that the use of electrical methods to discover whether a nerve is or is not divided is of no great interest, but I venture to suggest that in a case of nerve injury it is of great practical importance to ascertain if surgical measures are or are not indicated, and if the muscular paralysis is likely to recover. It is only by aiming at scientific accuracy in estimating the degree of impairment of nerve function that exists following an injury that ultimate success in determining these points correctly is to be attained. Although far from perfect the condenser set is an important step in this direction.

Many observers have pointed out that the faradic coil is not an accurate instrument for testing muscle reactions, since the factors upon which the response depends—voltage, duration of each electrical impulse, rate at which the impulse is delivered—are variable; further, the majority of cases of nerve injury fail to show any response to the faradic coils in clinical use. Galvanism, as ordinarily used for testing, is similarly inaccurate, for voltage, milliampère readings, resistance, etc., require standardizing. In the condenser set the voltage is fixed and the duration of each impulse known; provided that the same precautions are invariably taken to minimize skin resistance and pads of the same size always used, we have a fairly accurate means of testing muscle reactions, and one which is not only useful for comparing observations made at different times on the same case, but also for the comparison of results with those of other observers.

The condenser I used was the modification of the Lewis Jones set suggested by Sir J. Purves Stewart. The condensers are charged from a direct current and by means of a rheostat and voltmeter; the charging current can be fixed at 100 volts; the condensers are alternately charged and discharged by a clockwork metronome and set of four mercury-containing cups. The scale consists of twelve stops varying in capacity from 0.016 to 4.0 microfarads;* for convenience, a muscle is spoken of as reacting on, for example, No. 6 stop, meaning a contraction occurs with a capacity of 0.10 microfarads at 100 volts, Lewis Jones scale.

Before testing, the limb is immersed in warm water for four or five minutes, and two wooden-handled electrodes, fitted with circular pads 1 in. in diameter, are used for the test. One electrode is placed on the motor point and the other electrode elsewhere on the muscle; excepting in the case of the intrinsic muscles of the hands, the pads are always pressed flat. The first test is made from one of the higher capacities, and, working from above downwards, the various capacities are tried until the lowest stop on which the muscle shows any appreciable reaction is reached. Consequently, when it is stated that, for example, peroneus longus reacts on No. 8 stop, we mean that the muscle will not react on any stop lower than No. 8 (0.5 microfarads).

All normal muscles do not react on No. 1 stop (0.016 mf. at 100 volts), and after extensive observations with the above technique, I adopted the following reactions as normal standards:

A. Upper Limb.

1. Musculo-spiral trunk: Latissimus dorsi, deltoid, triceps, supinator longus, extensor carpi radialis and ulnaris=No. 1 stop (0.016 mf.).
   Rhomboids, supraspinatus, extensor communis digitorum, and extensors of thumb=No. 2 stop (0.025 mf.).
2. Median nerve: Flexor carpi radialis=No. 1 stop.
   Flexor sublimis and profundus digitorum, flexor longus pollicis =No. 2 stop.
   Abductor and opponens pollicis=No. 3 stop (0.033 mf.).
3. Ulnar nerve: Flexor carpi ulnaris=No. 1 stop.
   Adductor pollicis, interossei, and intrinsic muscles of little finger=No. 3 stop.
4. Other muscles: Trapezius, pectoralis major, brachialis anticus, and biceps=No. 1 stop.

From the above it will be seen that the larger and more superficially situated muscles of the arm react on No. 1 stop, the deeper muscles, especially of the forearm, react on No. 2 stop, while the intrinsic muscles of the hand react on No. 3 stop. In individuals with a thick palmar skin the thenar and hypothenar muscles may only react when No. 4 stop (0.05 microfarads) is reached.

B. Lower Limb.

1. Sciatic trunk: Gluteus maximus, biceps, semimembranosus, and semitendinosus=No. 2 stop.
2. External popliteal nerve: Peroneus longus and brevis, tibialis anticus, and extensor brevis digitorum=No. 2 stop.
   Extensor communis digitorum and extensor proprius hallucis =No. 3 stop.
3. Internal popliteal nerve: Gastrocnemius soleus=No. 2 stop.
   Flexor longus digitorum, flexor longus hallucis, and interossei= No. 3 stop
   Flexor brevis digitorum=No. 6 stop (0.10 mf.).
4. Anterior crural nerve: Rectus femoris, vastus internus, and externus=No. 2 stop.
5. Other muscles: Adductor longus and adductor magnus= No. 2 stop.

In must be borne in mind that, in general, no definite conclusions can be drawn from condensor tests made within one month of the infliction of the nerve injury.

With regard to injuries to mixed nerves, it is to be remembered that although motor paralysis and complete sensory loss in the area of cutaneous supply may be found at an examination made more than a month after injury, the nerve may still recover its function, apart from operation. It is in these cases that condenser tests are of great value. If in lesions of the musculo-spiral, median, anterior crural, sciatic, external or internal popliteal nerves, the majority of the muscles react on No. 7 stop (0.25 mf.) or below, an incomplete lesion may be diagnosed and recovery almost certainly expected without operation. The same may be said of an ulnar nerve lesion in which the intrinsic muscles of the hand react on or below No. 8 stop (0.5 mf.).

To illustrate the type of lesion which may be associated with reactions at Nos. 7 to 8 stops, the following case may be mentioned:

Examination was made two months after injury to the ulnar nerve by a gunshot wound four inches above the wrist. There was paralysis of the ulnar muscles and the usual sensory loss.

* The scale is as follows:

No. 1 stop	= 0.016	microfarads	at	100	volts.
No. 2 ,,	= 0.025	,,	,,	,,	
No. 3 ,,	= 0.033	,,	,,	,,	
No. 4 ,,	= 0.05	,,	,,	,,	
No. 5 ,,	= 0.083	,,	,,	,,	
No. 6 ,,	= 0.10	,,	,,	,,	
No. 7 ,,	= 0.25	,,	,,	,,	
No. 8 ,,	= 0.5	,,	,,	,,	
No. 9 ,,	= 1.0	,,	,,	,,	
No. 10 ,,	= 2.0	,,	,,	,,	
No. 11 ,,	= 3.0	,,	,,	,,	
No. 12 ,,	= 4.0	,,	,,	,,	

The interossei reacted on No. 8, adductor pollicis on No. 9, and abductor minimi digiti on No. 7. A good prognosis was given and operation not advised. Owing to the report not reaching the ward, an exploration was carried out a few days later, when the nerve was found only slightly adherent to the surrounding tissues.

If in muscles normally reacting on Nos. 1 or 2 stops, no response is obtained below No. 8, most of the muscles supplied by the damaged nerve reacting between Nos. 8 and 10, the case should be treated on the usual lines and re-examined after an interval of six weeks. If no improvement is then found in the condenser reactions, operation should be advised, although sensory loss be not present over the entire area supplied by the nerve. At operation the nerve is usually found suffering compression from involvement in scar tissue or partially divided. In the case of moderate compression, even though recovery might eventually ensue, freeing the nerve often hastens recovery and renders motor function more complete. If actual retrogression is found after the six weeks' interval, exploration should be advised without hesitation.

If the muscles supplied by the injured nerve fail to react on any stop below No. 10, the majority reacting on Nos. 10 to 12, the nerve is suffering from severe compression, partial anatomical division, or, in some cases, complete division, and is most unlikely to recover apart from operation. Consequently, it has always been my practice to advise operation in such cases, and I have not seen a case in which subsequent exploration failed to show the necessity for surgical treatment.

It is not, of course, possible nor necessary to distinguish between anatomical and physiological division, but, as a matter of interest, I have found relatively few cases examined at a period exceeding two months from the date of injury, and in whom subsequent operation has shown a complete anatomical division of the nerve, will show a response on a stop below No. 12 in any muscle supplied by the injured nerve. In the case of the lower limb the muscles usually fail to show a response even on No. 12 stop when the nerve is completely divided. I have met with only one case of complete anatomical division of a nerve, even in the upper limb, which, examined not less than one month after injury, exhibited a muscle in the area of supply reacting on a stop below No. 10 at 100 volts. Even in this exception—a case of median nerve injury seen three months after damage from a gunshot wound—only one muscle, flexor carpi radialis, reacted under No. 10--namely, on No. 9.

If all muscles supplied by the injured nerve fail to react on the highest stop (No. 12), complete division, either physiological or anatomical, is usually present. If not anatomically divided, the nerve is found to be so intimately involved in scar tissue as frequently to render resection and end-to-end suture necessary.

It has been suggested by Hernaman-Johnson and others that as in severe injuries involving the nerves of the lower limbs the muscles often fail to react even on the highest capacity (No. 12) at 100 volts, it would be desirable to use a higher voltage than 100 for testing leg muscles. Although certainly desirable for the accurate estimation of reactions, for practical purposes my experience has been that if the muscles fail to react on No. 12 at 100 volts operation will certainly be required. In many such cases testing with galvanism shows a sluggish response, with A C C greater than K C C; others, especially if several months have elapsed since the time of injury, fail to show a response with galvanism, while a few show a fairly brisk response, with K C C equal to or slightly greater than A C C. Whenever I have seen a case in which the muscles supplied by the injured nerve failed to respond on any condenser stop at 100 volts, I have invariably advised operation, and in all cases has the subsequent exploration revealed a severe injury, which apparently could only recover as the result of surgical intervention.

A practical difficulty sometimes arises when muscles are much atrophied; the condenser discharge, on No. 8 or No. 9 stop being reached, produces marked contraction in muscles in the neighbourhood of those in which stimulation is being attempted—as, for example, in musculo-spiral nerve lesions with considerable atrophy of the extensors of the wrist, marked contraction of the normal flexors of the wrist and fingers occurs on No. 8 or No. 9 stop, the electrodes being on the extensor muscles. Similarly, in external popliteal nerve lesions with atrophy of the anterior tibial muscles, contraction of tibialis posticus occurs when No. 8 or No. 9 stop is reached, the electrodes being on tibialis anticus. Although unsatisfactory from the point of view of exact testing, the practical importance of the occurrence is not as great as might appear, for it may be safely assumed that the severity of the nerve lesion is such as to require operation. In all cases I met with the exploration advised was never found to be unnecessary.

With regard to cases of injury to a mixed nerve with only partial sensory loss (that is, anaesthesia and analgesia over only a portion of the cutaneous area supplied by the nerve) the muscles innervated by the affected nerve seldom fail to react on or below No. 10 stop. If reacting on No. 8 or below, recovery almost invariably ensues without operation. Other cases in which the majority of the muscles react on No. 10 should be re-examined every four weeks; if no improvement be apparent after the second or third examination, exploration should be advised. Some cases appear to remain stationary; in such instances operation usually reveals moderate involvement in scar tissue or a partial division of the nerve, and surgical treatment is followed by rapid improvement. In cases with incomplete sensory loss and condenser responses on No. 5 to 6 stops, voluntary movement is almost always complete in four to six months.

As regeneration of a motor nerve proceeds there is usually a progressive diminution in the capacity of the condensers required to evoke a contraction in the muscles supplied by the damaged nerve. When the condenser reactions improve progressively month by month, it may be safely assumed that recovery is taking place in spite of the continued absence of voluntary movement. For some time following an operation on a nerve, however, there is an actual regression in the condenser reactions as compared with those taken immediately before the operation—that is, for some time following operation higher capacities are required to produce a response in a muscle supplied by the nerve involved than were needed prior to the operation. The period required before the condenser reactions return to their previous level is usually four or five weeks, and the regression occurs irrespective of the nature of the nerve operation—that is, it follows freeing from scar tissue as well as resection.

In some cases, particularly in injuries to nerves of the lower limb, the condenser reactions, apart from operation, may remain stationary for three or four months and then slowly improve. When the condenser reactions approach No. 8 stop from above, voluntary movement may be expected shortly to appear. Occasionally the reaction may improve down to No. 10 or 9, and then remain stationary while voluntary movement is developing. If after operation no change in the condenser reactions takes place month after month, it is probable that the operation has been unsuccessful and that no recovery of motor function will occur.

It is not suggested that one should rely solely on quantitative condenser reactions; there are other important factors that often have to be considered, such as the condition of the paralysed muscles, the absence or otherwise of systematic treatment, the quality of the reaction, sensory changes, Tinel's sign, etc. The purpose of the foregoing remarks is to illustrate the value of condenser tests in assisting one to arrive at an opinion as to the extent of a nerve lesion, the nature of the treatment to be recommended, and the ultimate prognosis.

DISCUSSION.

Dr. W. J. TURRELL (Oxford) expressed some disappointment that Mr. Souttar had not attached more importance to electro-diagnosis. The final decision in regard to the value of such investigation rested with the surgeon for whose information the tests were made, and if he felt that it was of little or no value the labours of the electro-therapeutist in this direction were largely in vain. Electro-diagnosis was probably the most advanced and best perfected of all the electrical procedures. When a new method of scientific investigation was introduced many workers usually complicated its technique by the unnecessary introduction of instrumental methods, which in course of time and as the result of experience were ultimately shown to be useless, and a return was then made to the original method of investigation. This had occurred in relation to electro-diagnosis. The methods now used by the most experienced workers were practically those of Duchenne of Boulogne and Erb. But though little or no advance had been made in the technique, considerable knowledge of the scientific principles underlying these methods had resulted from the work of Lapicque, Keith Lucas, Adrian, and others. This method had the advantage of being a very definite one. The first thing to be realized was that two very different points had to be investigated. Dr. Adrian had

very conclusively demonstrated[1] by some instructive experiments that the nerve had what he well termed "a quick mechanism"—that is to say, it reacted with an electrical stimulus lasting only about $\frac{1}{1000}$ second. The muscle, on the other hand, required a much longer stimulus for its excitation—at least $\frac{1}{100}$ sec.—and in the case of advanced degeneration $\frac{1}{10}$ sec. or even longer. In the case of the nerve the point to be ascertained was whether or not there existed a direct continuity throughout its axis cylinders with the end plate in the muscle. In the case of the muscle, its condition—excitability, contractility, etc.—had merely to be ascertained. As the desired information in the two cases differed so fundamentally, it was both reasonable and desirable to employ a different method in each case. The stimulus from the coarsely faradic coil as used in medical work had a time duration of about $\frac{1}{1000}$ sec.; this was, therefore, quite long enough to excite the quick nerve mechanism, but was much too brief to excite the more slowly responding muscle. If a contraction resulted from a faradic stimulus, it could be concluded that the nerve was functioning and was neither compressed nor divided. The only two exceptions to this rule were (1) cases in which insufficient time—less than three weeks—had elapsed since the injury, and (2) the rare cases of Erb's paradox—temporary nerve compression. On the other hand, with the galvanic current any duration of current was obtainable, and thus the more slowly acting muscle could be excited, and thereby an opinion could be formed of its condition, both from the number of milliampères required to excite it, or better still, from the type of contraction elicited. The points the surgeon required information upon were: (1) Is the nerve functioning? (2) If not, what is the degree of degeneration of the muscular fibres? These two simple methods supplied a clearer and more definite answer to these questions than an attempt to establish by the use of condensers or by other means a gradual and graduated recovery between the nerve and the muscle, which in reality did not occur.

Dr. F. HERNAMAN-JOHNSON (London) agreed with Mr. Souttar that one of the most important things to determine electrically was the point of time at which nerve impulses began to flow again, in however small a degree, into a muscle which had been cut off from its supply. It had been noted for many years that voluntary power might return before faradic response; yet one could not but believe that the power of the muscle under such circumstances to respond to electrical stimulation must be vastly different from what it was shortly after the nerve severance or blockage. It might be true, as Mr. Souttar said, that often the first electrical sign of recovery was an enlivened response to galvanism, but the recognition of this must depend a great deal upon the personal equation, which it was desired to eliminate as much as possible. His own experience of electrical testing had been chiefly with the Lewis Jones condenser set, as modified by himself in such a way that any number of impulses from 1 to 30 per second could be passed into a muscle at a given potential. The voltage, the capacity of each condenser, and the number of impulses per second were therefore under control; only the resistance of the skin remained uncertain, and this variable he had tried to stabilize as much as possible by the method mentioned by Mr. Souttar, namely, previous immersion of the limb in hot water and, later on, when he had them, by whirlpool baths. In general one found that, coincident with clinical improvement, smaller and smaller capacity condensers were required to excite the muscle, but there were puzzling cases in which the largest size condensers were still required, although voluntary movement had returned. Experiments made by doubling the voltage and halving the condenser capacity showed that muscle wholly severed from its nerve gave the same reaction to the same voltage-capacity product, with perhaps a slight balance in favour of the higher voltage. But a muscle which showed no improvement at 100 volts, though it had regained voluntary power, responded in a remarkable way to a doubled voltage, requiring usually a voltage-capacity product of one-quarter or less to produce the same excitation. Afterwards experience showed him that, even where there was no sign of voluntary power, ability to respond to a greatly lowered voltage-capacity product when the potential was raised from one to two hundred connoted a good prognosis. The advantage of the method was that the changes were definite and recordable in figures. On treatment he had to part company to some extent from Mr. Souttar. A muscle the nerve supply of which was cut off wholly or in part was no longer a normal muscle, and argument applicable to normal muscles must not be applied to it without modification. To suggest, as Mr. Souttar did, that it was practically impossible to tire by electrical stimulation a muscle cut off from its nerve supply was to run counter to a great body of expert opinion. Sir Robert Jones and his school at one time held that rest and relaxation alone would restore almost any muscle in which the nerve supply was not irreparably injured; and, *per contra*, that such a muscle could not recover if stretched and over-stimulated. This rest-and-relaxation business was, no doubt, at one time overdone, but nevertheless it effected many remarkable cures. Personally the speaker believed that a combination of Sir Robert Jones's original methods with suitable electrical treatment gave the best results. He was still doubtful whether a muscle should be stimulated to contract before there were some signs that its nerve supply was in process of being restored. Professor Langley had called attention to the fact that the individual fibres were—in the early stages at any rate—in a state of fibrillary contraction. This being the case, stimulation of the muscle as a whole would seem to be theoretically unjustifiable while this phase lasted. Professor Langley had also shown experimentally on animals that electrically produced contraction during the first few weeks did not prevent atrophy. Treatment of the limb in a bath by some form of interrupted current not strong enough to produce visible contraction was, however, of the utmost value. The old idea that months must elapse before any signs of motor regeneration could be detected would no longer hold water. In some cases after only five or six weeks electrical tests would show improvement, and he had known voluntary movement occur in the peronei muscles eleven weeks after suture. When it was decided to begin to produce contractions he preferred to use an interrupted current made up of a succession of condenser impulses, both poles being placed on the muscle—the current flowing for one second, and being off for an equal time, or rather more. This procedure needed to be done at first with extreme caution, and it was easy to lose the progress of weeks by two or three days of over-stimulation. After treatment, the limb should be put back upon its "relaxation splint," but the affected muscle need not be relaxed to such a degree as to overstretch its healthy opponents; nor would stretching it by passive movements for a few minutes do any harm. But he urged that such muscles required rest and relaxation, and should be stimulated too little rather than too much. With the passing of another year or two all would have been done that could be done for the lower neurone injuries due to the great war. But infantile paralysis would in all probability go on playing havoc with the limbs of children. Experience gained in the management of this disease formed the basis of our original treatment of nerve injuries in war; and now, in turn, war experience would be utilized in the treatment of paralysed children. The danger of over-stimulating muscles affected by lesions of their motor nerves could not be too much emphasized.

Dr. F. HOWARD HUMPHRIS (London) directed his remarks more particularly to the practical side of the treatment of paralysed muscles. He mentioned the melted paraffin wax bath as a valuable means of preparing the limb for massage and maintaining or restoring a healthy condition of the skin. As an electro-therapeutic measure for causing massive muscular contraction the static wave current was an agent which, in a discussion on the subject of paralysed muscles, must not be left out of consideration. While there might be no evidence to show that the mere passage of a current through the limb had any effect on the growth of a divided nerve, yet when the pathology was considered—the circulatory stasis, the chemical nerve block—and the action of a current, diathermic or ionic, in increasing the circulation and dispersing the stasis, it might logically be deduced that the effect of the current's passage would be to benefit the region of the divided nerve.

[1] Physiological Basis of Electrical Tests in Peripheral Nerve Injury. By Dr. E. D. Adrian. *Archives of Radiology and Electro-therapy*, May, 1917.

Mr. SOUTTAR, in reply, said that he had had the greatest appreciation of the value of electrical methods in deciding in a doubtful case whether or not a nerve was divided. At operation it was his custom repeatedly to test the nerve he was exploring, and he could not lay too great stress on the value of the results obtained.

X RAYS IN THE DIAGNOSIS OF TUMOURS OF THE THORAX.

BY

ROBERT KNOX, M.D.EDIN.,

Honorary Radiologist, King's College Hospital; Director of Electrical and Radio-therapeutic Department, Cancer Hospital.

THE examination of the thorax for the detection of a new growth is by no means a simple procedure. It is not often that the investigation is undertaken primarily for this purpose; frequently in the routine examination unusual shadows are seen, and then it becomes necessary to rapidly pass in review the conditions which are likely to present abnormal shadows in the thoracic picture. On other occasions it is the primary object of the examination to demonstrate the presence of a tumour, to indicate its position, and to give some suggestion as to its nature. Practically any variety of tumour may be found at one or other time situated in the thorax either arising from the framework or from the internal structures.

A tumour of the thorax may either be: (1) Extra-thoracic—that is, arising from one or other of the structures forming the framework; (2) intrathoracic; (3) both extrathoracic and intrathoracic. It may be that a tumour belonging to one or other of the first two groups may originate in the bony framework and secondarily invade the internal structures, or, originating within the thorax, a tumour may invade the bony or muscular framework.

Technique.

Radioscopy is most useful in a preliminary investigation because it offers a great deal of useful information: the patient should be screened in as many positions as possible, and all variations in size and shape noted. Pulsation should be most carefully looked for because it is so very valuable in the differential diagnosis to know that the tumour pulsates and whether the pulsation is direct or transmitted. On this point alone a diagnosis can often be made. Negatives should always be taken as a final step in the technique, and it is often well to take these in several positions; a consideration of a number of negatives from different angles will afford valuable aid when we have to sum up and give an opinion on the nature of a shadow.

TUMOURS OF THE CHEST WALLS.

These, though not very troublesome in diagnosis, may occasionally lead to error if the observer is not familiar with their *x*-ray appearances. Always remember that in a screen or plate examination we are looking upon a flat picture which in reality is a composite one formed of a number of structures lying in different planes, and therefore likely to lead to difficulty in differentiation. There are points of difference with which every radiologist should be familiar, but it is matter for comment that on several occasions structures at the periphery have been mistaken for tumours at a deeper level. The breast, for example, in an oblique view of the chest will be superimposed over the cardiac shadow, and give rise to a decided increase in its density.

Exostosis of the scapula situated on the vertebral border close to the spine was very nearly mistaken for a calcified area in the lung. It was accurately diagnosed by moving the patient in several directions, and finally differentiated beyond any doubt when the patient raised the arm above the head. Any of these errors in diagnosis can readily be avoided if stereoscopic negatives are made.

Tumours of the soft parts are lipoma, fibroma, abscess (tuberculous and infective), warts, keloid, etc. Malignant growths involving the skin and soft parts must be kept in mind. These are rodent ulcer, epithelioma, sarcoma, carcinoma. All are capable of giving a moderately dense shadow on the negative. A tumour of the skin, if shown on a plate which has been placed in contact with the surface on which it is formed, will be very sharp in outline and of almost the natural size, but when the same tumour is shown on a negative which was taken with the plate on the distal chest wall the shadow is larger, less well defined, and more difficult to distinguish. Such a structure, if of a sufficient density to cast a shadow, might quite well be mistaken for a tumour in the pleura or lung.

The difficulties are increased the deeper we go into the interior. Tumours of the ribs, the sternum, the clavicle, the scapula, and of the dorsal spine, may on occasion give great trouble in differential diagnosis.

The simple tumours of the bony framework are enchondroma and osteoma (exostosis). There are certain diseases of early life which may also give rise to changes in bone which in later life may give appearances which are misleading—of these the commonest is rickets, leading to deformity of bone—and changes in the appearance of the bone may be difficult to distinguish from some forms of malignant disease. Tuberculosis and other inflammatory conditions of bone may also give appearances which are difficult to distinguish from those of new growth. Calcareous deposits on the costal cartilage are a very common cause of error; shadows are thrown which will require to be distinguished from new growth or healed tubercle in glands, etc.

Malignant tumours of the bony framework are sarcoma (generally primary), carcinoma (usually secondary). Tuberculous diseases of these structures are frequently encountered, and when a localized inflammatory swelling or abscess results the appearances are likely to be confused with those of new growth. This particularly applies to tuberculosis of the dorsal spine. Tuberculous caries of the spine will lead to deformities which will give irregular shadows readily mistaken for new growth.

The pleura is from its nature and anatomical relations a structure particularly prone to inflammatory and other lesions. A consideration of its distribution on the parietal and visceral aspects of the thorax will enable us to realize how difficult it may be accurately to diagnose one of the many lesions to which it is liable. A careful study of this important structure and the diseases to which it is liable is well worth any trouble.

It is not possible to deal fully with the lesions of the pleura; it will be sufficient to mention the complications and to point out how important it is to have a clear mental picture of what is likely to happen when the pleura is affected, and the difficulties that changes in the pleura may give rise to when dealing with tumours.

TUMOURS OF INTERNAL ORGANS OF THE THORAX.

Of the progressive tissue changes the most frequent is tumour formation. The varieties of tumour are divided into benign and malignant; of the former, fibroma, lipoma, chondroma, osteoma, and angeioma may occur. These are not very common, but their presence may cause difficulty in diagnosis.

The most important of the malignant tumours is the endothelioma, which may grow to a large size and give a very definite *x*-ray picture. It originates more often in the pleura than in any other situation save in the dura mater. The *x*-ray appearances may not differ greatly from a secondary sarcoma or carcinoma. The chronic thickening of the pleura known under the name of "formative pleurisy" is also very cancer-like in its appearance, while all of these tumours may be accompanied by a fluid effusion in the pleural sac.

Sarcoma is occasionally found in the young, and the various forms of it may be met with—namely, lympho-sarcoma, chondro-sarcoma, and myeloid sarcoma.

The Mediastinum.

This region is a most important one, for it contains so many structures from which tumours may take origin. Of these the following must be mentioned: Dermoid cysts arising from the thymus gland; when of large size the tumour may be mistaken for aneurysm. The pulsation should be carefully watched to determine whether it is direct or transmitted. Malignant new growths are rather frequently met with. Sarcoma is one of the most common of the mediastinal tumours. It is either a pure sarcoma arising from the connective tissue of the mediastinum or a lympho-sarcoma arising in the lymph glands. There are other forms. The lymphadenoma is very frequently met with, and is generally associated with glandular enlargement in other regions. Any of these, when present, will give the appearance of a large mediastinal tumour. These will vary with the position

from which the tumour arises, its rate of growth, and whether it is complicated by inflammatory changes, degenerative changes in its substance, or the formation of adhesions to other structures, such as the aorta, pleura, etc. A tumour of fairly regular outline may give the pulsation phenomenon, and it may be extremely difficult to decide between the diagnosis of tumour or aneurysm. Carcinoma is also frequently met with in the mediastinum.

The Lungs.

Tumours of a primary origin are rare. Of the benign varieties, fibroma, lipoma, chondroma, and osteoma may be found. Adenoma and teratoma are of great rarity.

Malignant Tumours.—The primary varieties are very rare; the most frequent is a carcinoma arising in the bronchi, a columnar-celled variety of growth, which grows with great rapidity and may assume a large size and soon end fatally. It cannot be distinguished radiographically from any other variety of carcinoma. Carcinoma may also arise in the peribronchial tissue. The bronchial type quickly leads to pulmonary symptoms because of the frequency with which the new growth causes pressure effects and collapse of portions of the lung. Of the sarcomatous types, the most common is that arising from the lung tissue or the lymphosarcoma occurring particularly at the root of the lung. Endothelioma is another tumour which may occur in the lung. It generally arises from the lining of the lymphatics and from the pleura, and may assume large dimensions. Secondary carcinoma is also common, it is most frequently an extension from the pleura or mediastinum. Chorionic epithelioma is another though rarer form of new growth which may be very malignant in type.

The Heart and Pericardium.

Primary neoplasms of the pericardium are rare and are generally sarcomatous or endotheliomatous in nature; they may give rise to shadows of considerable size. Secondary growths are rare; the pericardium is generally involved by secondary extension of a growth involving an adjoining structure, such as the lung, pleura or connective tissue. Examples are the lymphosarcoma or carcinoma. Cases of cysticercus and echinococcus hydatids have been described.

Cardiac enlargement from intracardiac diseases should be remembered when dealing with an enlargement of the cardiac shadow. Primary tumours of the myocardium are distinctly rare, although fibroma, myxoma and lipoma have been reported. The most typical primary tumour is the rhabdomyoma, a condition generally of multiple tumours found in children and of congenital origin.

Secondary tumours are not uncommon, sarcoma being more frequent than carcinoma. These generally involve the heart muscle by direct extension from the pericardium or connective tissue of the mediastinum.

Hydatid cyst of the heart will give a typical appearance: an oval tumour projecting from the cardiac shadow displacing it, and presenting the usual cyst-like outline; pulsation may be transmitted, when aneurysm of the heart will have to be considered as an alternative diagnosis.

Relative Opacity of Normal and Pathological Thoracic Structures.

The references and classifications given deal only with the types of tumour most likely to arise in the thorax. No attempt has been made to describe the histology of these tumours, yet it is easy to realize how important in interpretation will be an intimate acquaintance with the macroscopic and even the microscopic appearance of tumour formations.

The *x*-ray examination of a number of tumours removed from the body is yet another of the uses to which the rays may be applied. It is a method, in the living, of analysis of the composition of a structure—the study of the pathology of the living as contrasted with the more usual methods of pathology. There exists a large field for such investigation. A knowledge of the relative opacity of the component parts of a new growth will be extremely useful. Bone will give the densest shadow, because its opacity is greater than any of the other structures; cartilage will only show in high-class negatives or when it is so situated that a clear path exists for the rays to pass through it—that is, it must not be superimposed by the shadow of a denser structure.

The *x*-ray diagnosis of morbid conditions within the thorax is probably the most difficult problem of those we are called upon to solve. It differs from gastro-intestinal work in one respect—it is rarely possible to introduce, save in the case of the oesophagus, opaque material to give contrast and so aid in differential diagnosis. The more recent method of intraperitoneal injection of oxygen has its analogue in the thorax in the spontaneous production of pneumothorax; here we get all the advantages of gas in a cavity, with the collapse of the lung as a secondary factor. The artificial production of pneumothorax is also helpful, and in a number of cases of tumour of doubtful nature it might be used as an aid to diagnosis.

Differential Diagnosis in Tumours of the Thorax.

There are a number of practical points in the diagnosis and prognosis in malignant growths of the thorax which are useful, and may be summarized as follows:

The points to observe and note are:

1. The *position of the tumour*. It is most important to determine where the tumour takes origin and the organs it is likely to affect by pressure, etc.
2. Its *size* and rate of growth. Its *nature*—that is, benign or malignant.
3. Its *effect* upon other structures. Lung tumours are much more likely to give rise to acute symptoms and end rapidly than mediastinal or pleural growths.
4. Pressure effects of malignant and non-malignant growths.
5. Whether primary or secondary.
6. The *x*-ray appearance of a tumour.
7. *Prognosis* depends upon the determination of the nature of the new growth, its position, its size, rate of growth, and effects on other organs.
8. The *method of spread*—very important as an aid in distinguishing between forms of malignant disease.

The diagnosis of an intrathoracic tumour is always difficult. The first point to ascertain definitely, when the presence of a new growth is demonstrated, or rather when a shadow appears which resembles a new growth, is whether it is intrathoracic or extrathoracic. Having decided that most important point, the next step is to accurately locate the new growth, for the correct determination of the site is often a direct guide to its nature. The next and most important is to decide whether it is a benign or a malignant growth.

There need be no real difficulty in determining whether a tumour is intra- or extra-thoracic if the investigator has a fair knowledge of technique and examines the patient in a number of standard positions. Stereoscopic radiographs will be the final method by which the question will be answered.

The exact determination of the site and origin will always be difficult and occasionally impossible. The possibility of showing the origin of a growth will depend largely upon the stage of its development. A small tumour may be situated in the mediastinum and it may even indicate the structure from which it is arising, but when the case is examined later it may, by reason of its size, obliterate all traces of its course except, perhaps, one which is obvious—namely, that it arises in the mediastinum. The majority of intrathoracic tumours, however, arise in the mediastinum, so that the fact is not of so great value in diagnosis.

An aneurysm may simulate in every detail save one the appearances of a slowly growing endothelioma or of a lymphosarcoma—the one point of value in differential diagnosis will be the pulsation observed in the tumour; if well marked and unmistakable, then the diagnosis will be aneurysm of the aorta or large vessels. The evidence of pulsation must be positive; if there is a doubt about it being direct or transmitted, then the sign falls at once in value. To complicate the matter still further, it must be remembered that aneurysm and tumour may occur in the same case, though this is of course comparatively rare. When they do occur in the same patient, both forms of pulsation may be observed. It may be possible to say definitely that an aneurysm exists, while at one spot the character of the pulsation is suggestive of new growth because the pulsation has not the clearly defined characteristics of an aneurysmal pulsation. These cases are extremely difficult to be positive about on *x*-ray evidence alone. Fortunately the diagnosis is rarely made on such evidence alone; there are other valuable aids to diagnosis upon which one may rely in these cases.

The majority of the thoracic tumours take origin in the mediastinum, and it is on distortions of the normal shadow of the mediastinal contents that a diagnosis of the presence of a tumour depends. What, then, are the indications which will aid in a differential diagnosis?

Ignoring for the time being the effects of pressure and the symptoms arising from it—always a most important guide in these cases—let us consider the nature of the distortion of the mediastinal shadow. The earliest manifestations may be very slight—a small protrusion at one or other hilus, rounded and fairly well defined, may indicate an early involvement of the lymph glands. A faint irregular shadow at the edge of the large mediastinal one may be the first hint of a mediastinal sarcoma, which later becomes very large and well defined. A bulging of the aortic shadow at one spot may indicate a pressure deformity of that structure from the gradually increasing size of a lymphosarcoma. Examples of these fine changes could be quoted at length, but these few examples will suffice to indicate the great value of a careful scrutiny of the contour of the mediastinal shadow in differential diagnosis.

Having determined the presence of an intrathoracic tumour (using the word in its broadest sense) the next point to consider is the nature of that tumour. Speaking broadly, an extension outwards from the mediastinum will indicate the presence of a tumour; it is, however, necessary, by a process of exclusion, to determine its exact nature. The cause of such a shadow will be ascertained to be, in order of frequency, tuberculosis, carcinoma, and sarcoma —that is, if we exclude the benign forms of tumour such as aneurysm, hydatid cyst, fibromyoma, etc. All three forms are frequently found originating in the mediastinum, and at a certain stage in the history of each it may be impossible to differentiate with certainty the one from the others.

Tubercle may give rise to very definite enlargement of the hilus shadows, but a careful examination of a large number of these cases will lead to the recognition of many definite points of difference. Tuberculosis of the mediastinal and root glands, if of long standing, is almost invariably accompanied by degenerative changes in these structures: there are caseation and calcareous degeneration, the former gives rise to large shadows of very indefinite density with regular outlines, the variation in density is due to the opacity of the caseous material not being equal and consequently offering a varying resistance to the passage of the rays through it. Calcareous degeneration will give well defined shadows showing up as light areas on the negative; in addition to these fairly obvious changes, the condition is accompanied by an increase of the fibrous tissue forming the basis of the bronchial and vascular trunks proceeding out from the mediastinum. This gives a characteristic appearance to the root shadows and the parenchyma of the lung which should readily be recognized. It forms a most important feature of great value in the differential diagnosis. When a mass of glands caseates and breaks down, an abscess may form which has a well rounded, smooth periphery; this will give an appearance similar to a new growth of the less malignant type—endothelioma or slowly growing sarcoma.

Carcinoma is the next most frequent of the forms of tumour-like shadows occurring in the mediastinum and invading the hilus of the lung. This form is almost invariably secondary to a lesion elsewhere, so the previous history will be a useful guide in such a case. Carcinoma of the mediastinum, which is already invading the hilus shadow, is not a very early stage of the disease, consequently it should possess a number of well marked characteristics. The shadows given by such a condition will therefore be more defined than a tuberculous lesion, the patches are larger, less regular, and there is an absence of the marked peribronchial thickening seen in a well marked tuberculous lesion. The glands are not uniformly enlarged; they are not so numerous, and therefore more localized to one particular area. The density is greater, and there is more inequality of the density. There is hardly ever a marked calcareous change such as would be expected in tuberculosis—though the latter is not always excluded, because it is probable that a number of cancer cases may at an earlier stage of their life have suffered from tuberculosis and bear the scars of the disease (if healed) in the tissues of the mediastinum or lymph glands. At a later stage of the case unmistakable appearances arise which will be dealt with later.

Sarcoma.—This may be primary or secondary. A primary lesion generally arises in the mediastinum, and frequently from the thymus gland. It may be a pure sarcoma, or, as is more frequent, a lympho-sarcomatous mass arising in the lymphatic tissue and having the sarcomatous elements mixed with the lymphatic structure in a varying degree, upon which will depend the degree of malignancy and the rapidity of spread. When seen at a stage in which it is just beginning to spread outside the mediastinal shadow, it will show as definite shadows at one or more points of the periphery, the edges are irregular, though in the slow growths there is not much invasion of the surrounding tissues. In this respect it differs materially from tubercle or carcinoma. The tendency is for the rapid development of large masses extending from one or other side, or both, of the mediastinal shadow.

Secondary sarcoma may also occur in the mediastinum when large bulging shadows are seen distorting the larger shadow of the structures in that region. The heart may be displaced or pressed upon from behind forwards and give the appearance of a large dilated organ. The lymph glands share in the enlargement, and may also exercise pressure upon these structures. A secondary sarcoma may extend along the bronchial trunks, and give rise to a coarse peribronchial thickening quite distinctive from that of tubercle by reason of its coarseness and wider spread. Another quite distinctive type of secondary sarcoma is occasionally found, though it is comparatively rare. It is met with in cases where the primary lesion has originated in a distant part of the body, such as one of the long bones. It may be met with two or three years after the primary lesion has been removed, and develops rapidly, for when the thorax is examined the mediastinum and the lungs show an advanced stage. The onset must be very insidious, since it is only at a late stage that attention is called to the thoracic extension, and that often accidentally when examining for other conditions. Such cases are obviously the result of a rapid dissemination of the sarcomatous elements by the blood stream, though the focus may have lain dormant for a considerable time. The nodular masses are fairly large, of uniform density, irregular in shape, and not very numerous. There may be pleural involvement, and other organs may become involved in the later stages of the disease. Calcareous degeneration is rare in this form of malignant disease.

Carcinoma, when widely distributed in the thorax, shows a picture which, when once seen, will never be mistaken for anything else. The mediastinal shadow is nearly obliterated, the edges being lost in the snow-flaked appearance of the lung and pleural involvement. The whole of the lung parenchyma is obscured by the masses of new growth of varying size which are spread all over the lung fields; very little of the lung tissue is left, so the normal appearance is entirely lost. Plaque-like masses are seen which are due to pleural involvement, in which both the parietal and visceral layers of the pleura partake. The masses vary in size from very small pea-like structures to large flakes one or more inches in diameter. The density of these patches varies considerably.

A thorax which is widely invaded by secondary sarcoma shows a typical and quite different picture: the masses are larger, often as large as a small apple; the density is more uniform and the edges of the masses are more uniform. The nodules are not nearly so numerous as in carcinoma, and there are larger areas of normal lung surrounding the infiltrating masses. The mediastinal shadow is not as a rule so completely obscured as it is in secondary carcinoma, though there may be considerable distortion of the shadow by large globular masses of secondary new growth. In neither case is there any marked tendency to caseation, which is so prominent a feature in an extensive tuberculous involvement of the lungs.

Tuberculosis of the bronchopneumonic type bears the closest resemblance to a widely distributed secondary carcinoma, and it rarely approximates to the appearance of a widely spread secondary sarcoma.

Syphilis of the lung is occasionally met with and may involve the lung or bronchi; it may occur in two forms—the interstitial or the gumma. Gummata may appear at the hilus in the form of rounded tumours of varying size. When very small these gummata may simulate the appearance of tubercles. A diffuse interstitial condition may involve large areas of the parenchyma and give the appearance of new growth. The appearance of a mass or masses giving shadows of doubtful nature which do not fit in with any of the generally recognized shadows should always lead to a suspicion of syphilis, then other tests may be made to confirm the diagnosis.

Infarction of the lung, if extensive, may give a tumour-like shadow. It generally comes on suddenly, is at first painful, and gives rise to symptoms of pulmonary

embarrassment; the shadow is typical in form and follows the distension of a vessel.

Hydatid cyst must never be overlooked in the differential diagnosis; it has certain well defined appearances, though on occasion, if adhesions have formed and obliterate the oval outline of the cyst, difficulty may occur in determining the exact nature of the shadow.

Aneurysm of the Aorta.—The presence of an aneurysm should be suspected when there is an increase in the width of the aortic shadow and marked expansile pulsation confined to a localized area. It must not be mistaken for the diffuse pulsation and dilatation in aortitis. The tumours likely to give shadows similar to those of an aneurysm are endothelioma and sarcoma arising in the mediastinum. It may be difficult on *x*-ray evidence alone to differentiate between them.

Tumour of the chest wall, particularly of the spine and sternum, may give shadows which may resemble a large aneurysm or a mediastinal tumour. The lateral or oblique position for the screen examination should be useful in indicating from which structure the tumour takes origin.

DISCUSSION.

Dr. HAROLD BLACK (Birmingham) said that the radiographic study of intrathoracic tumours called for a wide clinical and pathological outlook. Without this the signs discoverable by *x* rays would usually prove inconclusive. The cases were fairly rare, but so many would come to examination in the *x*-ray department of a large general hospital that the radiographer had an unusual opportunity of studying them. They could be separated broadly into those that arose (1) in the region of the middle shadow, and (2) in the region of the lung fields. These could in turn be divided into primary and secondary growths. The most common of the primary lung tumours were the carcinomas. He thought about 500 cases had been recorded. Bronchial carcinomas affected the right side more than the left, in the proportion, roughly, of five to one, and were mainly of three types: (1) Fan-like growths spreading from the hilus; (2) lymphatic or miliary; (3) lobar. Diagnosis was difficult if the pleura was involved and an effusion was present. Help was afforded by aspiration and introduction of oxygen. Generally speaking, they were distinguished from the secondary growths in being irregular in outline and unilateral. A broad rule was that if an unusual type of shadow were seen in an unusual situation on the screen, growth should be suspected. Secondary lung growths had a typically rounded, regular form. Clinically they were difficult, as Barjon pointed out, because they did not communicate with the air passages and gave so little indication of their presence to the stethoscope, and being deep they gave no dullness. It was very important to recognize them, however, as they influenced prognosis and the advisability of an operation in many cases. Secondary sarcomas were fairly common, and the speaker had been struck with the riddled appearance of the lung which could obtain in patients who showed little inconvenience from them. The primary pleural growths were rare. They spread with great rapidity. The middle shadow or mediastinal tumours comprised sarcomata, carcinomata, lymphomata, and leukaemic tumours. These had to be diagnosed from aneurysms. He felt that pulsation in aneurysm was not constant enough to be relied upon, as the large fibrin deposit in a large aneurysm must prevent any considerable pulsation. Simple tumours were rare, with one exception—namely, the intrathoracic thyroid enlargement, which was worthy of more attention than it had received in the English literature. This condition was not rare, and was often responsible for the breathing difficulties of men of the apoplectic type at about the age of 45. He used to see several of these cases every week in the *x*-ray clinics in Vienna. He saw few in the Midlands of England. He thought the explanation was that the short-necked apoplectic Austrian, with his fondness for beer, was much more liable to them. This condition caused pressure effects on trachea, vagus, and blood vessels. It displaced the trachea, and might push the aortic arch so far down as to cause a recurrent laryngeal palsy from stretching. The outline of these tumours was curved, and they ascended on coughing. They displaced the trachea more than growths did, for the growths tended to grow around the trachea.

Dr. HOPE FOWLER (Edinburgh) mentioned the possibility of a pharyngeal pouch extending down into the chest and simulating tumour. Such a case, to be published by Sir Harold Stiles, had come under his observation. This condition might easily lead to confusion. Dr. Ironside Bruce had had a similar case sent to him as a case of tachycardia. Very few of these cases had been put on record. The more experience one had in the examination of chest tumours the more difficult it was to come to any definite conclusion as to an exact and reasonable diagnosis.

Dr. IRONSIDE BRUCE (London) said that his experience of tumours of the mediastinum was that although such tumours were easily seen it was most difficult to make differentiation. Aneurysm of the thoracic aorta could not be distinguished from other tumours, in his experience, by the presence of pulsation. Pleural effusion—a frequent complication of thoracic tumours, which so often obscured the whole of the suspected side—was one difficulty in diagnosis which could not be dealt with by simple aspiration, on account of the distress which was caused by complete evacuation of the fluid. But evacuation of fluid with injection of oxygen to replace the fluid did not give rise to any distress, and by increasing the translucency of the affected side rather aided the *x*-ray diagnosis.

Dr. FLORENCE STONEY exhibited three prints. The first showed a tumour in the right lung, diagnosed by physicians as an aneurysm, but probably either hydatid, dermoid, or tropical abscess. The second and third showed Hodgkin's disease of the thorax. The tumour, which was 5 in. across, disappeared under *x* rays, and the case remained cured for nine months as a result of *x*-ray treatment, when the man died from growth elsewhere.

Dr. J. HALL-EDWARDS (Birmingham) thought that these obscure chest conditions were much more numerous than was generally realized, and therefore Dr. Knox's contribution to the subject was all the more important.

THE DIAGNOSTIC VALUE OF THE RENAL OUTLINES,

AND THE METHOD OF DETERMINING THE RELATION OF ABNORMAL SHADOWS TO THEM.

BY

S. GILBERT SCOTT, M.R.C.S., L.R.C.P.

As it is now quite easy to demonstrate the outlines of the kidney without any very expensive and elaborate apparatus, I wish to summarize their diagnostic value and at the same time to describe a method dependent on their demonstration which I have for some years found of practical use in the differential diagnoses of shadows appearing in the renal region. It is as important to show the renal outlines as it is to show the bones. A certain amount of training is required to pick out the outline of the kidneys in every case, but the knack is soon acquired. In a number of cases the outline is obvious, but it is seldom that the kidney can be seen in its entirety; about the lower three-quarters can on the average be detected, but this is sufficient for the purpose of diagnosis. Occasionally the whole organ, together with the hilum, can be made out.

RENAL OUTLINES.

1. *Normal Kidney.*

Presence of Both Kidneys.—In some cases it is important to be able to state definitely that both kidneys are present. For instance, the surgeon may decide to remove one organ on account of disease, and the presence and condition of the opposite one is of vital importance. There may be a congenital absence on one side, in which case there is usually some hypertrophy of the single organ.

Size.—There is considerable variation in the size of the kidneys in adults, even in the same patient, and it is practically impossible to give the exact measurements of a normal organ as seen in the radiograph. Consequently, it is by no means easy to decide in some cases whether one is dealing with a congenital large type of kidney or with an early enlargement. A generous margin must be allowed, and considerable experience is required before an early enlargement can definitely be diagnosed without such

accessory means as pyelography. Increased size usually manifests itself in an increase in the breadth rather than the length of the kidney—in other words, the kidney becomes more rounded. Size is also deceptive when the position of the kidney is low, as it frequently is on the right side in women. It appears very much larger than it really is, and one is wrongly led to suspect that there is an early hydronephrosis due to kinking of the ureter, owing to the low position of the organ. In children the size of the kidney is also very deceptive, as they are on a lower level, and are of relatively large size. Here again the size may be variable on either side.

Shape.—(1) Pointed or torpedo shape. (2) Rounded. (3) Lobulated. The long narrow kidney (1) is frequently met with and may give the impression that it is smaller than usual, while the rounded kidney, on the other hand, may suggest enlargement. It is possible to get both types present in the same patient. The outline of a normal kidney should be smooth and symmetrical, but one occasionally comes across a congenital lobulation without any disease. If this is present, however, congenital deformities in other parts of the urino-genital tract should be looked for.

Position.—It is difficult to lay down any hard-and-fast rules as to the position of a normal kidney; a generous margin must be allowed, and the respiratory excursion taken into account. The general radiographic topography of the kidneys, however, is as follows: Upper pole between the eleventh and twelfth dorsal vertebrae, lower pole at the lower part of the second and third lumbar vertebrae; so that one can say that a kidney is abnormal in position if its upper pole is on a level with the tenth dorsal or its lower border below the third vertebrae. In the female the kidney is reckoned to be half a vertebra lower than in the male, and it is seldom that both kidneys are on the same level, the right as a rule being slightly lower than the left, but this may sometimes be reversed. Another variable quantity is the long axis.

Respiratory Excursion.—The excursion between full inspiration and full expiration is half an inch to two inches, but in singers an excursion of even three inches may be attained. This movement is not always directly up and down, but a certain amount of rotation around the pelvis, usually tending to throw the pelvis forward, may take place at the same time. The full movements of a movable kidney can be detected radiographically as long as the outline of the kidney can be seen.

2. *Kidneys Abnormal in Size.*

Hypertrophy.—One kidney may be hypertrophied owing to a congenital or acquired absence of the other. Various degrees of hypertrophy of the healthy organ will be seen as the diseased kidney gradually becomes functionless.

Hydronephrosis due to back pressure will cause an enlargement of the kidney as a whole. The ability to gauge the degree of back pressure caused by, say, a stone in the ureter, is of considerable value, for as long as evidence of back pressure is wanting there is no danger in waiting to see if the ureteric calculus will pass without surgical interference. The hydronephrosis may be localized to one part of the kidney (cyst), in which case a distinct bulging of that part of the kidney may be observed, and unless the cause of this local hydronephrosis can be detected—as, for instance, a small stone in one of the calyces—it is difficult to distinguish the condition radiographically from a new growth. Where general hydronephrosis has caused considerable dilatation of the kidney itself, lobulation is often present. Pyonephrosis can only be distinguished from hydronephrosis by the presence of calcareous material, which is opaque to the rays in an enlarged kidney.

New Growth.—The outline may in this case show a local enlargement or bulge, and one may have to rely on the history to distinguish this condition from local hydronephrosis or cyst.

Cystic.—Except for a general enlargement of the kidney there is frequently nothing to distinguish this from enlargement due to other causes, but occasionally an alteration may be seen in the density of the kidney where cysts are present. Local areas of translucency in an enlarged kidney usually indicate their presence. If there are several stones widely separated and distributed throughout the cortex, cysts are practically certain to be present.

Syphilitic.—This is a rare condition in which the kidney shows definite enlargement, and at the same time increased density owing to fibrosis, but otherwise there are no distinctive features.

Contracted or Atrophied.—It is not always easy to make out the outline of a small atrophied kidney, which may be congenital or acquired through disease; except for the small shrunken outline there is nothing distinctive about it, but in tubercle, in addition to the atrophy, opaque patches will be seen. The kidney may become functionless and contracted if a large dendritic stone is present.

3. *Large Abnormal Shadows Present.*

If a large typical dendritic calculus is present the diagnosis is easy, but at the same time the outline of the affected kidney will give additional data: (1) State of the kidney, such as the presence of hydronephrosis or pyonephrosis. (2) Its functioning powers as gauged by the thickness of the renal cortex; frequently the thin-walled functionless kidney can be seen moulded to the branches of a large calculus. (3) Fixation of the organ as shown by the absence of respiratory excursion, which should be tested, as the surgeon will be grateful for any information on the subject of fixation if the kidney has to be removed.

4. *Medium and Small-sized Shadows Present.*

Unless the abnormal shadow is that of a typical dendritic stone, some method should consistently be used to prove that it is in connexion with the kidney. Appearances are very deceptive, and no matter how like a stone it may seem to be on the plate, guesses backed by experience should be replaced by a more scientific and accurate method. I have made it a rule for several years before giving an opinion on any abnormal shadow appearing inside the borders of the renal outline that it must be proved to be connected with or outside the kidney itself. This has saved me many a wrong conclusion.

Method of Determining the Relation of Abnormal Shadows to the Kidney.

The method may be summarized as follows:

(1) The outline of the kidney must be seen.
(2) An abnormal shadow lying *outside* this cannot be in the kidney.
(3) If the shadow lies inside the limits of the outline, then it is necessary to compare the plate taken at full inspiration with one taken at full expiration.

The respiratory excursion of the kidney is first measured, and the respiratory movements of the shadow under discussion are then compared. The direction of the movement of each is also noted. If the respiratory excursion and direction of the kidney and abnormal shadow are the same, the latter must be in connexion with the kidney. A rule, therefore, can be formulated that if an abnormal shadow or shadows, no matter how small and insignificant they may be, lying inside the renal outline, move to the same extent and in the same direction as the kidney, they must be connected with it. This rule will apply to one or several shadows, and in this way it is quite easy to pick out from a number of shadows those that are of renal origin. In some cases the kidney may be fixed, and no respiratory excursion obtainable. If, however, it be possible to demonstrate that the shadow under discussion has moved in some direction or other, while the kidney has remained unaltered, the shadow must be outside the kidney.

Once having diagnosed the presence of a stone in the kidney its correct position in the organ itself can be given, and a rough estimate made as to its size; if the surgeon has confidence in his radiological colleague, he has only to make an incision into that part of the kidney in which the stone has been localized, just large enough to extract it with forceps, thus doing away with the somewhat drastic mutilation of the kidney which usually takes place when searching for stones.

This method of localization is invaluable where the shadow is extremely indefinite and doubt is felt as to its nature. These ill-defined "smudges," a term their appearances suggest, are very often the only evidence of tuberculous disease in a kidney; consequently it is of great importance that they should not be overlooked; having been detected, the diagnosis is clinched if they can be located in the kidney itself. An abnormal shadow, however insignificant, must not be ignored, but unless these

shadows can be proved to be of renal origin, they are of themselves not of much value.

EXAMPLES OF METHOD.

In order to make the method described clear, a few examples may be given:

1. A small single shadow is detected lying over the lower half of the kidney, say 20 mm., from the lower edge and 20 mm. from the outer edge. On comparing the inspiratory and expiratory plates it is found that the kidney and the shadow show the same respiratory excursion, say 30 mm., in a downward and outward direction, and the relation of the shadow to the kidney is unaltered. This proves that the opacity has moved with the kidney, both as to direction and extent, and is therefore of kidney origin.
2. The shadow is lying over the lower pole, but on comparing the inspiratory and expiratory plates, it is found to have moved clear of the kidney altogether. This at once demonstrates that it is outside the kidney.
3. The same thing can be proved if the opacity is found to move downwards, say 10 mm., while the kidney shows an excursion of 20 mm.

These examples will suffice to illustrate how the method can be utilised. The comparative measurements are quickly made, and a small transparent metre rule will be found very useful for this purpose.

X-RAY THERAPY IN "ORIENTAL SORE."*

BY

J. GOODWIN TOMKINSON, M.D.,

Professor of Diseases of Skin, Anderson's College; Skin Physician to Out-patients and Medical Electrician (Dermatological), Western Infirmary, Glasgow.

AT the last pre-war annual meeting, held in Aberdeen, I contributed a short paper, entitled "Four Cases of Lahore Sore," to the proceedings of the Dermatological Section. In it stress was laid upon the probable rôle played by insects in its transmission. The four cases were those of a father and three young children who had recently returned from Sialkot in the Punjab. The three juvenile cases were of some interest in that they supported the theory of the disease being disseminated by insects. I understand this theory has been confirmed by Captain Acton, I.M.S., whose researches are recorded in the *Indian Medical Gazette* and *Indian Journal of Medical Research*.

The four cases had been treated with solid CO_2 at the Civil Hospital in Sialkot. In the communication to the proceedings of the Aberdeen meeting no allusion was made to treatment after arrival in this country. The lesions in the cases of the three children were small, and on coming under my care solid CO_2 treatment was continued with successful results. The lesion of the adult patient was large—at least 3 by 2 inches, and situated on the forehead. I did not resume CO_2 treatment in this case. *X*-ray treatment was begun on June 10th, 1914. Three half Sabouraud pastille doses of unfiltered rays were given, fourteen days intervening between the first and second, and thirty-three days between the second and third exposures. By August the lesion had so much improved that the protective dressing was finally discarded. Two more half-pastille unfiltered doses were given, the last one as a precautionary measure.

The result was in every way successful. I was curious to know what was the condition of the forehead from the aesthetic point of view after the lapse of time, so sent, a few weeks ago, for the patient, still resident in Glasgow. Close inspection was necessary to define the site of the old lesion. The only evidence that remained was slight whiteness of the skin, and scarcely warranted the designation of cicatrix.

Since 1914 two other cases of oriental sore have come under my care.

In April, 1919, an officer who had developed two lesions in Mesopotamia was sent to me from the Yorkhill Military Hospital, Glasgow. He had previously been treated daily for six weeks with ionization for Aleppo boils at the Millbank Military Hospital. I do not know what ions were introduced, but no apparent improvement, judging from the patient's description, had resulted. The lesions were situated on the back of the left wrist and the dorsum of the proximal phalanx of the left ring finger. Dr. Haswell Wilson, of the Pathological Department, Western Infirmary, Glasgow, very kindly examined blood films from the lesions, and found *Leishmania tropica* present in large numbers, thus confirming the Millbank diagnosis.

X-ray treatment was begun on April 9th, 1919. In this case a 0.2 aluminium filter was used and a half Sabouraud pastille dose given once weekly. Treatment was interrupted after the third exposure owing to the patient being ordered to appear before a medical board, with consequent temporary transference to a military hospital, from which, after an interval of some weeks, he was again sent to me for further treatment. This was begun on June 20th, 1919, and comprised six half Sabouraud pastille doses through 0.2 aluminium filter at intervals varying from fourteen to twenty-five days. The last two exposures were perhaps unnecessary, and were given with a view to the prevention of relapse. This gentleman has left the army and has returned to his pre-war avocation. During *x*-ray treatment wet boracic dressings were applied, but were soon discarded for a mild mercurial ointment.

On April 12th of this year a demobilized officer who had served in Palestine and Mesopotamia consulted me, on the recommendation of his family physician, for an affection of the lower third of the nose and upper margin of the pinna of the left ear. The lesions were suggestive of oriental sore, and blood films from them were kindly examined in the Pathological Department, Western Infirmary, Glasgow, by Captain Forsyth, I.M.S., who has had considerable experience of this affection. The causative bodies of oriental sore, *Leishmania tropica*, were found.

The patient had returned to this country *viâ* Port Said in May, 1919, and not until the end of October, or beginning of November, did the lesions appear—an interval of about five or six months after leaving Port Said. This is of considerable interest in illustrating the lengthy incubation period that may occur prior to any visible evidence of infection. He had passed several months at home with an apparently sound skin. The patient stated, however, that he had suffered from boils during the past winter (1919–1920), and, indeed, one was present at the time of consultation in the left external auditory meatus. Three intramuscular injections of colloidal manganese were given and no further boils have appeared.

X-ray treatment of the two sores, begun on April 17th, is still in progress, and at the present date (June 5th) five half Sabouraud pastille doses, through 0.2 aluminium filter, have been given at intervals varying from seven to fourteen days. There is evidence of improvement in the ear lesion. As in the preceding case, wet boracic dressings and a mild mercurial ointment have been applied.

Medium to hard tubes have been used.

Obviously it would be necessary to treat many more cases before presuming to come to any definite conclusions as to the therapeutic value of *x* rays in oriental sore, or as to the relative value of filtered and unfiltered rays in that condition. The advantage, however, accruing from the elimination of irritating soft rays by the interposition of aluminium screens far outweighs that of any curtailment in length of treatment which might possibly result from the employment of the unmodified output of the tube.

I am informed *x* rays are not invariably successful in treating oriental sore. It is quite conceivable, however, that this might be due to faulty technique. Assuming such to be the case, there is something to be said in favour of *x* ray therapy, especially where a patient objected to intravenous injection involved in treatment by antimony tartrate, or to the pain and discomfort attendant upon treatment with solid carbon dioxide.

* Synonyms: Lahore sore, Aleppo boil, and many other names arising from the localities where the disease is prevalent.

THE MELTED PARAFFIN WAX BATH.

BY

F. HOWARD HUMPHRIS, M.D., F.R.C.P.EDIN.,

Officer in Charge, *X*-ray and Electro-therapeutic Departments, 3rd London General Hospital.

THE "melted paraffin wax bath" was introduced into the practice of medicine by Colonel Littlewood, C.B., C.M.G., O.C. 2nd Northern General Hospital, Leeds. Observations and tests have proved that it is of considerable therapeutic value in itself, and as a preliminary for massage and other treatment. It is an important factor in the armamentarium of modern physio-therapeutics.

A few years ago Mr. W. L. Ingle, of the firm of Messrs. W. L. Ingle, Limited, tanners and curriers, heard that a Frenchman was employing melted paraffin wax for the treatment of rheumatism and disorders of the circulation,

and had set up a bath in Paris. He was a considerable user of paraffin wax in the course of his business, and had noticed that many of his workpeople were in the habit of immersing their hands and feet in a vat of the wax at his works at Cherwell, Yorkshire. The vat had a holding capacity of half a ton, and was heated by steam. So many cases were benefited at Cherwell that later Mr. Ingle presented this bath to the 2nd Northern General Hospital. Last November, by the courtesy of Colonel Littlewood, I was shown the bath, and was told that, in the opinion of the patients, no means of physiotherapy was more successful in giving relief in cases of stiffened joints, neuritis, and rheumatism. I installed a bath in London.

Colonel Littlewood kindly gave me this general summary of diseases and conditions which had been treated at the hospital. Stiffness of muscles and joints due to:

(1) Direct destructive effect of wounds, including cicatricial contractions,
(2) Spastic or other contracture due to nerve injuries,
(3) Deformity and stiffness due to long-continued splinting of injured limbs,
(4) Vasomotor dystrophies such as frostbite, etc.

Among other conditions in which I have found it useful are:

(1) Chilblains,
(2) Neuritis,
(3) Rheumatic and gouty joint,
(4) Fibrositis, especially in and around small joints,
(5) Scleroderma following old lymphangitis,
(6) Cramp in calf of leg, intermittent claudication,
(7) Eczema vesiculosum,
(8) Old phlebitis.

I am inclined to think that many other conditions would derive benefit from this form of treatment, Raynaud's disease among others.

As to construction, the bath, in brief, is made of fire-clay 3 in. thick (this is necessary to prevent the radiation of the heat), and is 6 ft. long, with parallel sides, white glazed inside, and over all, also with four white glazed fire-clay pedestals, and having stoneware draw-off tap, and is fitted up with a self-contained heating apparatus, and heat regulating switch. This is fixed at the top end of the bath, and keeps the molten wax in circulation. The whole heating apparatus is enclosed in white enamel ironwork, as shown in the illustration. The bath is wired up in the ordinary way to a switch panel fitted with ampèremeter, one double-pole ironclad switch, and two single-pole ironclad fuses. The bath is usually worked from a 200 volt alternating or direct current supply; in my case it is 230 volts direct, and the current taken can be regulated from about 8 ampères down to 2 ampères. One must expect to use, on an average, at this voltage, 5 ampères from ten to twelve hours to keep the wax sufficiently melted.

While I describe here an electrically heated bath, which has its advantages, it would be well to note that electricity is only one means of heating. Steam or gas might be used where either happened to be the more convenient.

Paraffin wax is distilled from coal-tar, wood-tar, or shale, and formerly the largest supplies came from Great Britain, and it is interesting to note that although at the present time several other European countries, as well as America, are refining large quantities of paraffin wax, the most satisfactory product for use in the wax bath is the "Sternol ozonized thermal wax," a highly refined British wax, sterilized under superheat and thoroughly impregnated with a powerful antiseptic which gives it a refreshing odour. The manufacturers claim that the treatment employed in the final stages of the refining of this wax renders it peculiarly suitable for application to the most sensitive skin.

The melting point of this wax is 120° F. It is practically non-inflammable, not more so than butter would be.

The wax is placed in the bath and heated by two temporary coils of wire; when the wax is sufficiently heated these may be removed and the bath heated at will by the permanent heaters. The two wires lead from the terminals to the heater, and there is an earth wire. The cables used are 7/20's and the current taken is about 8 ampères at the maximum down to about 3 and 2½ ampères. The patient remains with hands or feet in the bath for about twenty minutes at a temperature of 125° to 130° F. The sensation is quite comfortable. At the end of this time the part under treatment is removed from the bath and allowed to cool. After two or three minutes the wax can be quite easily peeled off. The skin will be found reddened, moist, and somewhat greasy, and in ideal condition for subsequent massage. The patient usually experiences relief from pain, and finds the joints more lissome.

Major Ernest Solly, R.A.M.C., of the 2nd Northern General Hospital, to whom I am indebted for much information about the bath, and who has had much experience with it there, in a note tells me that a thing of importance for orthopaedic work is to have baths of two or even three different temperatures—say 110°, 120°, and 130° F.—as cases with nerve injury as well as stiff joints cannot stand a temperature of 130° to 135°, although this and even up to 140° can be taken with benefit by those who have stiff joints without nerve lesions. Patients with nerve lesions can stand and benefit by the 115°–118° bath when they could not endure the 130° bath without blistering, etc. For the lower temperature baths wax with a lower melting point is required.

In the early days of the use of the bath in Leeds the gradual fouling of the wax by the dirt, dead epithelium and sweat which comes from the patients' limbs presented a little difficulty. Experiments have shown that even if the wax peeled off the patient's limb on removal from the bath is put back and melted up in the bath, the melted wax shows no living organisms of which cultures can be made, and the watery and solid contamination sinks to the bottom of the bath and could be run off from time to time, but the fatty elements of the sweat necessarily float up and mingle with the wax generally, which thus becomes gradually altered in composition. Experiments have been made in washing the wax in a cauldron, stirring up with boiling water, and after allowing all to cool, lifting off the solid blocks of "washed" wax and melting them up in the bath. This, however, does not remove the unsaponified matter. Neutralization of the fatty acid elements by adding caustic soda to the boiling water makes the washing process more efficient, but it would require a frequent careful analysis to prevent either an excess or deficit of the amount of caustic soda used in the washing. In practice, however, the only practical way is that the coat of solid wax clinging to the patient's limbs is removed on withdrawal from the bath and thrown away, and though Major Solly tells me that it may be sold for trade uses for only a little less than new clean wax, personally I have as yet been unable to find buyers. From an average of a good many treatments the quantity of wax removed from each patient amounts to about 1 lb.

The *rationale* of the treatment, I think, may be thus explained. The heat causes dilatation of the capillaries, and the surface is warm and red some time after being taken out of the bath. This capillary dilatation naturally increases the circulation in the deeper parts, whether these be nerves or joints, and if the pain be caused, which is more than probable, by the pressure of the stasis or congestion, then this being relieved, it seems only natural that the pain should also be relieved. That the circulation, both local and general, is improved is very evident, and patients have told me that the mere fact of treating chilblains on their hands has relieved the chilblains on their feet, and in another case in which the heart beat numbered 40 to 44 to the minute, it rose to 72 at the end of the treatment, and after four days' treatment was usually 72. In the treatment of chilblains, patients as a rule say that irritation ceases after the second treatment, and objectively the skin loses its tight-stretched character, and presents a much more normal appearance. Moisture appears on the hands an hour or so after taking them out of the bath. In some cases the patient remains cured, and in others fresh chilblains appear in a period varying from a few days to six weeks, when further treatment results in a return to the normal again; but if only a temporary normal can be obtained by this means, a temporary normal frequently produced will often result in a permanent normal.

It may be asked, Would not the same heat applied through a water bath have the same effect on the capillaries, and circulation generally? The first answer is, the same heat cannot be applied through water, since the highest temperature admissible in a water bath is 105° to 110° F. Paraffin wax in the state of oil which it assumes when heated, is a much feebler conductor of heat than water. Weber estimated the relative conductivities of oil and water as 0.003 and 0.001 respectively, which is to say that water conducts three times as well as oil, or oil is much gentler as a heating agent, and therefore a higher temperature can be borne through it.

As another theory of the way in which the wax bath acts as a curative agent, I venture to put forward the following: If neuritis be an inflammatory condition, caused by the insulation resistance of a sheath of nerve or nerves

being damaged, and the consequent escape of nerve current or electricity being evidenced to the patient as pain, it is possible to theorize that the wax, being an efficient insulator, might oppose sufficient resistance and block the exit of electricity, and thus account for the relief of pain. In connexion with this theory it was suggested to me by Colonel A. H. Tubby that when the limb is taken from the bath the wax, instead of being peeled off, should be allowed to remain on and a bandage placed over it, and thus continue the beneficial effects of insulation.

But whatever the reason is for the therapeutic result of the wax bath, I think a case has been established for a more extended trial of this new agent, whether as an interesting adjunct to orthopaedic work, a valuable preliminary to massage, or a therapeutic agent in its own right, as which, I am quite convinced, it has a great value.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

OPTIC NEURITIS DUE TO DENTAL SEPSIS.

ON March 8th, 1920, I was consulted at the Birmingham and Midland Eye Hospital by Miss I. T., who was sent by Dr. John C. Griffiths of Kidderminster. The patient complained of fairly rapid loss of vision in the left eye and pains across the forehead, both of one week's duration.

Examination.—R.V. = $\frac{6}{18}$; with −1.25 dioptre sphere = $\frac{6}{6}$. L.V. = less than $\frac{6}{60}$, not improved by glasses. There was a slight divergent strabismus of the left eye, said to be of one week's duration. The left fundus showed a typical optic neuritis, the disc being almost completely obscured, and the vessels, particularly the venules, were very engorged. The urine was normal. The teeth were good on the whole, but on the left side there was a carious upper molar whose crown was almost completely eroded. The patient did not complain of pain or anything wrong with this tooth, but, as it appeared to be the most probable cause of her loss of sight, I advised its removal. I also prescribed a mixture containing sodium bicarbonate and sodium salicylate.

A fortnight later (March 22nd) I saw her again; the optic neuritis had diminished, and the visual acuity of the left eye was $\frac{6}{36}$, and $\frac{6}{18}$ when her slight myopia was corrected. The carious upper molar had been extracted, and at each of the three roots an abscess was found.

On April 19th I saw her for the last time. The fundus was almost normal, and the left vision with correction was $\frac{6}{6}$.

The case is interesting, first as an example of optic neuritis due to neighbouring sepsis, and secondly, on account of the rapid improvement with recovery of vision which followed removal of the foci of toxic absorption.

H. W. ARCHER-HALL,
Honorary Assistant Surgeon,
Birmingham and Midland Eye Hospital.

REMOVAL OF A PIN FROM THE LARYNX BY AN IMPROVISED METHOD.

A YOUNG man came to me recently complaining that he had just been choked at his dinner while eating some beef-steak pudding. He was suffering a good deal of pain and had frequent attacks of coughing and retching, with excessive secretion of mucus, but no dyspnoea. There was nothing visible in the pharynx, but the laryngeal mirror revealed a shining object looking like a pin—which it proved to be later—lying obliquely across the larynx about midway between the epiglottis and the vocal cords. For want of a better instrument I bent a plated sponge-holder with a safety catch into a curve, and, arming it with a small pad of cotton-wool, passed it into the larynx and succeeded in lifting the pin up from its position without, however, recovering it. The mirror now showed it attached to the mucous membrane on one side of the larynx at a higher level. It was again dislodged by the same method and lifted into the pharynx, where, being visible to the unaided eye, it was easily removed with nasal forceps. There was the merest trace of haemorrhage on the wool.

The observations were made with reflected daylight and no local anaesthesia was employed, the passive demeanour of the patient being of material assistance.

South Nutfield. L. N. HARDING, M.B.Cantab.

ACUTE ULCERATIVE STOMATITIS CAUSED BY DRUGS.

ABOUT fourteen years ago, with the object of relieving hemicrania, to which I am subject, I tried 10-grain doses of antipyrin. At the same time I became subject to attacks of stomatitis, sometimes simple and sometimes ulcerative. On two occasions I had concurrently anal ulcers. I soon discovered that this disease always followed a dose of antipyrin. On stopping the use of that drug I brought the attacks of stomatitis to an end.

During my absence at the Cambridge meeting of the Association my partner saw a young lady for me who was suffering from exacerbation of old sphenoidal sinus disease. The most distressing symptom she had, however, when I saw her was acute ulcerative stomatitis. Learning from my own experience, I inquired what drug she was taking, and found it was aceto-salicylic acid. She told me her mouth was worse after each dose. The stomatitis had resisted all local treatment. Cessation of the drug led to a rapid and complete cure.

Both cases are instructive.

Wrington. HUBERT C. BRISTOWE, M.D.Lond.

A CASE OF HEPATIC ABSCESS.

ON May 28th, 1920, A. B., aged 24, was referred to the Royal Halifax Infirmary by the Local Pensions Committee. He complained of abdominal pain and looseness of the bowels, which had commenced six weeks previously, whilst on passage home from India.

Condition on Admission.—The temperature was 98.4° F., the pulse 76, the respirations were 20. Urine specific gravity 1020, clear, acid, no albumin, no sugar. The pain was of a diffuse character: he indicated its site by sweeping his hand over the right side of the abdomen. Since the onset there had been three or four motions daily, containing mucus but no blood. Hitherto he had always been healthy, having had neither dysentery nor malaria whilst in India, so far as he was aware. On examination there was a slight fullness of the right lower chest wall, but the outstanding physical sign was a transverse zone of hyperaesthesia on the right side 1½ in. in width, reaching the middle line both in front and behind, situated just below the umbilicus—that is, in the cutaneous distribution of the eleventh right dorsal nerve. The lower border of the liver was just palpable below the right costal margin. Over the right lower chest vocal fremitus was slightly diminished, the percussion note dulled, and the respiratory murmur and vocal resonance were impaired. After one or two attempts pus was found by exploration in the tenth intercostal space in the posterior axillary line.

Operation.—Part of the tenth rib was resected, and the pleural cavity incised. A large abscess was found extending deeply between the base of the right lung and the diaphragm. It contained bile and pus, which were not intimately mixed together; the evacuated matter was odourless. A drainage tube having been inserted, the wound was sutured.

A specimen of the pus was sent to Dr. Taylor, the borough bacteriologist, who reported that it contained liver débris, bile, blood, and pus. No amoebae were found, nor did subsequent scrapings from the wall of the cavity nor examination of the faeces reveal their presence. The patient made an uninterrupted recovery.

The zone of hyperaesthesia, with its strictly segmental distribution, suggested at first the premonitory stage of herpes zoster.

I have to thank Dr. Wishart for his courtesy in assisting me with the operation and for permitting me to publish the case.

Halifax. WILLIAM OLIVER LODGE, M.D.

OUTWARD DISLOCATION OF THE HEAD OF RADIUS.

THIS dislocation being of rare occurrence, I venture to give a few details of a case met with recently in practice. The patient, a boy, aged 9 years, jumped over a low seat, tripped as he reached the floor, and fell forwards with outstretched hands. He was brought to my surgery in half an hour from the time of the accident. On examination the left forearm was at right angles to the humerus, the elbow-joint was much wider than that of the other limb, and there was a large haematoma on the inside of the joint. The head of the radius was on the outside of the external condyle, and could be felt rotating during the movements of pronation and supination. The dislocation was reduced by traction forwards and pressure on the neck of the radius downwards. Two weeks later the joint had recovered its mobility.

Bishop's Waltham. W. DREW MITCHELL.

Reviews.

INFECTIONS OF THE KIDNEY.

MR. FRANK KIDD'S book on *Common Infections of the Kidney*[1] is based on a course of lectures delivered at the London Hospital. He is a vigorous writer, and though the text of his discourse is furnished by bacterial infections of the urinary tract, the reader is entertained throughout the book by digressions into subjects of general interest; the digressions by no means detract from the value of the book, but, on the contrary, add to it. We heartily agree with Mr. Kidd in his suspicion of laboratory workers whose experience is confined to the laboratory. Whether "short post-graduate courses in clinical medicine for laboratory workers" will furnish the salvation of these unhappy gentlemen we are not prepared to say, but it is certain that closer mutual co-operation between clinician and pathologist is essential if progress is to be achieved. The author believes that the danger of the clinical side of medicine being neglected is very acute.

> "The real heart of the problem," he writes, "has been missed because in their intense study of bacteria bacteriologists have forgotten to study the infected human being. They have failed to notice the numerous factors which are at work to predispose a certain individual to pathogenic infection with bacteria which utterly fail to cause disease in the large majority of the race."

In his book, therefore, Mr. Kidd sets out to achieve two things: first, to furnish a dogmatic clinical picture of bacterial infection of the genito-urinary tract; secondly, to bring forth certain general principles underlying these observed facts. In his explanation of the phenomena of urinary infection he starts from Adami's conception of intermittent bacterial blood invasions, but maintains that Adami did not go far enough. Mr. Kidd holds that "blood invasion by bacteria is a common daily occurrence in most healthy individuals," and that it is only when an exceptionally heavy invasion of bacteria has taken place, or when certain secondary "predisposing causes" have injured the vitality of the tissues, that trouble occurs. In order, therefore, to be in a position to deal effectually with urinary infections we must consider not only the invading organism, but the secondary causes that have led to the increased severity of the invasion or to the damage of the tissues.

The question of ascending infection of the kidney receives considerable attention. After a critical review of the work of various investigators the final conclusion reached is that, although ascending infections occur, they account for very few of the cases seen by the surgeon, the vast majority being the result of blood-borne infection. The moral that the author logically draws from these conclusions is that instead of joining in a vain attempt to sterilize our surroundings and rid our tissues of inevitable bacteria, we must concentrate our attention on avoiding the secondary causes of disease, and avoid breaking the common-sense rules of health. Thus:

> We must teach people how to keep their skins clean, their mouths and air passages clean, and to keep their bowels in order by proper food, efficient mastication, and regular bowel action. We must teach people to avoid exhausting themselves with the rush and the worry of modern life. We must teach them to use fresh air without contracting chill, and teach them, especially women, to dress properly.

Mr. Kidd has pointed out the steep and thorny path! A large section of that portion of the book dealing with the clinical aspect of this subject is devoted to pyelitis. The author believes that in the vast majority of cases of *coli* infection the kidney is implicated. Pure cystitis has often been erroneously diagnosed, owing to the disposition to regard strangury and frequency as symptoms of bladder rather than of kidney inflammation. Renal lavage has, in the author's experience, proved of the greatest service in such cases.

A chapter is given to haematogenous prostatitis, and another to orchitis. In the latter the author speculates on the etiology of the so-called idiopathic hydrocele. He believes that these hydroceles are nearly all due to an old chronic inflammatory nodule in the epididymis, set up in the past by an infection with the colon bacillus. The practical section of the book includes a chapter on the bacteriology of the urine, written by Dr. Philip Panton, clinical pathologist to the London Hospital.

Mr. Kidd has produced an interesting and suggestive book, clearly arranged, and written in vigorous, dogmatic language. As he explicitly states in his general preface, he has made little use of literature, and has relied on "personal deductions drawn from personally observed facts." Where criticism of conflicting opinions has been necessary he has not hesitated to indulge in it, vigorous criticism being a "healthy tonic for seeking after truth."

[1] *Common Infections of the Kidney with the Colon Bacillus and Allied Bacteria.* By Frank Kidd, M.B., B.C.Cantab., F.R.C.S.Eng. London: H. Frowde, and Hodder and Stoughton. 1920. (Demy 8vo, pp. 351; 16 figures, 5 plates. 18s. net.)

DEMODEX.

MR. S. HIRST, of the Natural History Museum, has tackled a subject of quite unusual difficulty in his review of the genus *Demodex*.[2] These mites, which inhabit the hair follicles of man and other animals, are better known by name than by sight to the average medical man. Very little indeed is known of their habits, and it is difficult to see how we shall ever acquire any knowledge; their anatomy is almost equally obscure, for they belong to those difficult border-line animals which can neither be manipulated nor dissected nor yet treated as entirely microscopic. On the whole we congratulate Mr. Hirst on the result of his efforts, for he has produced what is evidently sound, systematic, and morphological work. When he deals with the red mange of dogs, which is always associated with the presence of huge numbers of these mites, and with the treatment of that and similar affections, he writes with less knowledge and less confidence; however, his summary of other workers' results appears to be reliable. The figures and plates are good and plentiful, but we are inclined to wonder whether the monograph could not have been produced at a lower price.

As medical men, we should like to know more definitely than we can at present whether *Demodex* is really pathogenic to man. It is, as Mr. Hirst tells us, sometimes found in immense numbers in various unhealthy conditions of the skin, but this might be explained by supposing that its multiplication was secondary to the skin disease. We must also know more of the part this mite possibly plays as a carrier of bacteria. It has of course been suggested that it is concerned in the spread of leprosy, and one can hardly doubt that it distributes the staphylococci and streptococci of the skin, for it is said to occur on 95 per cent. of human beings.

THE BIOLOGICAL SOCIETY OF BARCELONA.

FEW countries have had the good fortune to be so far from the theatre of war that their scientific life could continue uninterrupted, but in Spain "research as usual" was the order for 1918. The sixth volume of the reports of the Biological Society of Barcelona[3] contains a large amount of work in medicine and its allied sciences.

Among these physiology occupies a prominent place. In an important paper on respiration Professor SUÑER advances the view that the vagal nerve endings in the lungs are sensitive not only to mechanical but also to chemical stimuli. Dogs were used in his experiments. He holds that the composition of alveolar air is kept constant as much by the stimulation of the vagi by CO_2 as by the effect of the gas on the respiratory centre. The experiments are based on Scott's work, but Suñer has modified and amplified his conclusions. Suñer's observations are of interest to the clinician, since his experiments suggest that the extreme dyspnoea of acute pulmonary disease may be due to the chemical effect of inflammatory products on nerve endings. By their study of the pancreas of dogs, Cervera and Domingo have gone some way towards clearing up doubts as to the nature of the islets of Langerhans. They believe that the islets may be divided into four definite types, and the observation may

[2] *Studies on Acari. No. 1, The Genus Demodex, Owen.* By Stanley Hirst. London: Trustees of the British Museum. 1919. (Imp. 8vo, pp. 44; 4 figures, 13 plates. 10s.)

[3] *Treballs de la Societat de Biologia.* Any Sisè 1918. Edited by A. Pi Suñer. Barcelona: Institut d'Estudis Catalans. 1918. (Med. 8vo, pp. 352; illustrated. 10 plates.)

form the starting-point of valuable research. A contribution to the histology of the nervous system is made by Rio-Hortega, who describes and illustrates some very remarkable arborizations of the protoplasmic processes of the cells of the fascia dentata in old animals of various species.

There are several communications in embryology, among which perhaps the most interesting is that by Domingo and Vilaseca on the development of the genital gland and the origin of sex cells.

In biochemistry Carrasco Formiguera publishes a method for the estimation of blood sugar based on that of Scales. The method appears to be one of practical utility, and, according to the author, gives constant results. Nevertheless it is possible, as is the case with most blood-sugar estimations, that the results, though uniform, are comparative and do not necessarily represent the real percentage of sugar. An instructive theoretical criticism of the method is contributed by Gomez Bosch. Several studies on reactions of the cerebro-spinal fluid have been made by different observers, but they are concerned rather with amplifications of old work than with new discoveries.

Anatomy and zoology are well represented, and veterinary science also finds a place in the reports. Only one communication appears in surgery, however, and but few in medicine, doubtless because physicians and surgeons have fewer opportunities and less leisure for experimental work. The relation of melanoderma to the adrenal and sympathetic systems is discussed by Ferrer Soiervicens, and some useful electrocardiographic observations are made by Agusti.

MEDICINE FOR THE LAYMAN.

PROFESSOR ROGER, Dean of the Faculty of Medicine of Paris, is to be congratulated upon the success with which he has written his book *La Médecine*[4] for the instruction of the general public. It is one of a series of volumes on the sciences of to-day, and gives a lucid and attractively written account of modern medicine, its origins, aims, performances, and methods of attack. Here the layman will find chapters or essays dealing with such subjects as sickness and health, the modes of pathological study, the evolution of medical science, the animate and inanimate causes of disease, the study and effects of infection and autointoxication in all their aspects, immunity, diagnosis, and the bases of treatment.

The text deals largely in generalizations and deductions, but plenty of facts are given to the reader where they appear necessary for securing the assent of his reason. Indeed, Professor Roger bases his method of description to a great extent upon historical evolution—a scheme of writing that has much to commend it when the writer's object is to explain to general readers the position and tendencies of so highly specialized and so far-reaching a science as medicine. Comparing the artist with the man of science, he sums up the two in an epigram: "The artist exteriorizes his personality; the man of science tries to interiorize Nature," and he goes on to point out the impersonal character of scientific work and discovery, and the importance of this character in the progress of medicine.

From the historical point of view he emphasizes the evolution of medical sciences in three main periods: those of clinical observation, of anatomical and pathological study, and of biological investigation; the causes of disease are classified as mechanical, physical, chemical, and animated. But just as the forces prevalent in the three periods of medical development overlap in their activity, so do the causes of disease overlap in the production of any given disease or illness, and Professor Roger gives an admirable description of the concurrence of several factors observable in the etiology of various illustrative diseases.

In the chapter on autointoxication—in which term the author includes intoxications arising by defect of secretions like those of the thyroid and suprarenal glands—that much used and much abused term "diathesis" comes in for definition. A diathesis, according to Professor Roger, is a particular mode of nutrition—or might one say an idiosyncrasy? Perhaps this chapter would gain in precision were the subject of sensitiveness to proteins considered in it, for it is to protein-sensitiveness that we must look for the further explanation of many of the disorders classed by the French as evidences of "arthritism" or the arthritic diathesis, and of spasmodic asthma in particular. Over 130 pages are devoted to the study of infections and infectious diseases, and a particularly broad outlook is taken in this section of the work, full weight being given to recent views and discoveries in this field of medical science. Discussing the problem of immunity to disease, the author gives a well balanced summary of the humoral and cellular theories and exhibits their interdependence. In his chapter on the evolution of pathology he gives an interesting analysis of the effects on daily life and daily ambition that may be expected to result from the social upheaval effected by the recent war. "Our young people have a much more practical spirit than our fathers," he writes. "They have suffered too much; they wish to enjoy life. So, too, is explained the double tendency to idleness and pleasure shown to-day by those whose age kept them from the front. How long will this state of mind last? What reactions will it produce?" These questions Professor Roger does not attempt to answer.

Writing about modern diagnosis and treatment, he points out how extensively the progress of medicine has converted these from arts into sciences demanding the most varied types of scientific knowledge and equipment; as for the future, he looks forward to still further advances in the application of the methods of scientific research to these purely practical questions. He writes with full knowledge and wide experience, and on every page gives due weight to the theories, past and present, that give or have given life to the dry bones of medical science, the brute facts and observations upon which it is based. Preserving a due balance between facts and fancies, he has written a stimulating narrative of the growth and present position of medicine that should be of great interest to medical men and intelligent laymen all the world over. How often have French writers shown their national aptitude for the popularization—or, as they term it, vulgarization—of the sciences! Professor Roger's book may be recommended with every confidence to the unusually wide circle of readers indicated above.

NOTES ON BOOKS.

PROFESSORS CRUCHET and MOULINIER of Bordeaux, whose short work on *Air Sickness*[5] now appears in English, were among the first to investigate the physiological effects of aviation and to pay special attention to the changes in arterial blood pressure. In the first chapter the observations made before the war, especially the rise in the diastolic blood pressure after a rapid descent from a high altitude of 1,000 metres or more, are summarized. The second chapter describes the advances made during the war in the physiology of aviation, and confirms their earlier conclusions. The etiology of air sickness is discussed in the third chapter; the rise in the diastolic pressure after a rapid descent from a high altitude is a normal reaction, due to vasomotor constriction, and is seen in perfectly trained athletes. It is quite peculiar to aviation, is due to increase of atmospheric pressure, and shows the strain to which the heart is subjected in continually adapting itself to different pressures. Hence cardiac fatigue is more readily produced in aviators than in other athletes, and the rate at which the change of atmospheric pressure is effected is an important factor in the causation of air sickness. Cardiac fatigue and myocardial weakness may prevent the rise of diastolic pressure or induce a definite fall. The authors do not consider that a true neurosis of aviators has any independent existence apart from the neurasthenia and psychasthenia in other persons. The last chapter contains general advice as to the health of aviators, and briefly gives the contra-indications to flying. The translation is well done, but the following sentence, "Digestive troubles, and especially gastro-intestinal atony, are of no use to the airman," though intelligible, differs from the otherwise ordinary style of this interesting handbook.

[4] *La Médecine.* By G. H. Roger, Doyen de la Faculté de Médecine de Paris. Paris: Masson et Cie. 1920. (Cr. 8vo, pp. 432. Fr.10 net.)

[5] *Air Sickness, its Nature and Treatment.* By René Cruchet and René Moulinier. With a preface to the French edition by Professor V. Pachon, and an introduction to English readers by Wing-Commander Martin Flack, C.B.E., M.B.; translated by J. Rosslyn Earp, M.A., M.R.C.S. London: John Bale, Sons and Danielsson, Ltd. 1920. (Cr. 8vo, pp. 111; 12 figures. 5s. net.)

We have received a copy of a useful little publication entitled *Income Tax and Super Tax, 1842—1921*,[6] which has been brought up to date to include the substantial changes effected by the Finance Act of this year. The various forms of relief by way of allowance for children and dependants, the methods of graduating the effective rate of tax, and the different advantages given to persons whose incomes are falling are dealt with briefly, but with sufficient clearness. But we suggest that in future editions greater space might be devoted to the "Reminders and Advice," even if the historical tables have to be curtailed; after all, what the average reader requires is a practical guide in present conditions rather than information as to the various rates of income tax in the nineteenth century—in the present day such comparisons are apt to be disagreeable, and are not very helpful. The publication contains all the necessary information on the important subject of "allowances," and many useful hints on points arising in the assessment of various forms of income; it has been carefully prepared, and within its limits should prove of real service to all taxpayers.

A new edition of the *Michelin Guide to the British Isles*[7] has been issued. The book is probably familiar to most motorists who use their cars for holiday tours. Anyone who has once used it is not likely to start without a copy. The information is arranged alphabetically, and includes particulars of the routes available between one town and another. By using conventional signs a great deal is packed into a small space. We have had the opportunity of testing it on many occasions, and seldom or never found it wanting. A special feature of the book is contained in Part II, where a list of fifty-two excursions is set out relating to the most interesting parts of England, Wales, Scotland, and Ireland. The new edition contains a number of plans of most of the principal cities, but the sketch maps which were a feature of other editions have been omitted.

[6] London: Oliver and Boyd. 1920. 3rd edition, rewritten. 1s. net; by post, 1s. 2d.

[7] *The Michelin Guide.* The Motorist's Vade-Mecum. Compiled and published by the Michelin Tyre Co., Ltd. 5s. net.

PRESENTATION TO DR. J. A. MACDONALD.

THE following further subscriptions have been received from August 16th to September 4th, in response to the appeal published in the JOURNAL of July 24th (p. 129), towards a presentation to Dr. J. A. Macdonald on the occasion of his retirement from the office of Chairman of Council of the British Medical Association which he had held for ten years. Subscriptions of any amount not exceeding five guineas should be made payable to "The Macdonald Presentation," and sent to the Medical Secretary, British Medical Association, 429, Strand, London, W.C.2.

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NEW CONCEPTIONS REGARDING IMMUNITY TO THE ENTERIC FEVERS.

(*Concluded from p. 326.*)

PART II.

The Efficacy of Vaccination in the Enteric Fevers.[1]

DURING the war, especially during the Argonne epidemic, Besredka had opportunities of judging the efficacy of protective typhoid inoculation. Among the patients in the French fever stations there were some who had never been inoculated, others who were insufficiently inoculated or inoculated a long time previously, and several who had been duly vaccinated according to the prescribed rite at a relatively short time before their admission to hospital. Amongst these last there were grave, even fatal, cases. In reaching a diagnosis only those were counted who gave a positive blood culture. In order to give an idea of the frequency of typhoid fever amongst the vaccinated he cites some unpublished figures. Of 102 patients showing typhoid bacilli in the blood, 23 had not been vaccinated, 38 had been insufficiently vaccinated (one, two, or three inoculations), and 41 had received at least four vaccinating injections. Besredka is of opinion that the vaccines—whether heated, etherized, sensitized, iodized, or mixed with oil—employed in the French army do not effectively prevent the contracting of typhoid fever. Such vaccines certainly confer an immunity, but an immunity different from that produced by a natural attack of the disease. The solidity of the latter immunity is well established, a second attack of typhoid fever in the same individual being an extreme rarity, if, indeed, it ever occurs. In the Argonne epidemic Besredka encountered amongst the patients some who had had a natural attack of typhoid fever five to twenty years previously. Taking into account only those who had the actual typhoid state, together with a positive blood culture, he had about 300 cases who had previously had typhoid fever. At that time the number of cases of typhoid fever during the epidemic approximated to the conjoined numbers of the two paratyphoid fevers. All those suffering from a second attack revealed a positive blood culture of *B. paratyphosus* A or B; in none was *B. typhosus* found. In other words, in comparison with the immunity conferred by artificial vaccination, that following a natural attack is of remarkable solidity; in all probability it is acquired for the remainder of life. Besredka set himself to see if the same degree of perfection might not be attained by artificial vaccinations.

Experimental Vaccination by Living Cultures.

As had been previously shown, the sensitization of rabbits by bile afforded a means of studying the question of immunity. The first series of experiments consisted in the oral administration of living paratyphoid bacilli, followed six days later by that of ox bile, and then by the intravenous injection of living cultures of bacilli. The rabbits thus treated survived for ten days, and died with profuse diarrhœa and haemorrhagic lesions of the small intestine, from which pure cultures of the bacilli were obtained. The control rabbits, which had not had a previous ingestion of living bacilli, died in twenty-four hours. In a second series the interval between the oral ingestion and the testing intravenous inoculation was lengthened to ten days without much difference in the result. Under these conditions one might conclude that the rabbits were not very appreciably protected by oral vaccination. Besredka, however, had recourse to animals previously sensitized by bile, and he found that the ingestion of living paratyphoid virus, preceded by that of bile, created a real immunity against this virus, so that when the rabbit was subjected to a fatal dose injected into the general circulation it resisted the infection. The experiments furnished two pieces of information: (1) That the ingestion of the living virus was only followed by immunity in rabbits which had previously been treated with bile, and (2) that as the rabbit acquired immunity under the same conditions as a man who has had an attack of the disease—that is to say, following oral infection—it was permissible to hope that a vaccine tested on the rabbit *per os* could be applied with success to man.

Properties of the Serum after Oral Vaccination.

Is the remarkable resistance of the rabbit prepared by bile subordinate to the production of serum antibodies?

[1] *Ann. de l'Inst. Past.*, vol. xxxiii, December, 1919, p. 882.

In rabbits prepared and infected *per os* there appeared in the blood in from five to fifteen days, according to the dose injected, an appreciable quantity of specific agglutinins—1 in 600 to 1 in 800. These increased in intensity during the following days, reaching a maximum about the twenty-fifth day, at which time it was not uncommon to find a titre for paratyphoid of 1 in 20,000 or even more. But this level was not long maintained; it fell rapidly, though it was still high for two months; even after four months it kept at 1 in 1,000, as contrasted with 1 in 50 or 1 in 100, which is a high normal titre. Along with the agglutinin content the protective power of the serum fell also when tested on rabbits and mice. The same results were obtained with horses. The conclusion seemed evident that, whatever the route of vaccination, oral or subcutaneous, it was always owing to the antibodies that the animal acquired its immunity, and Besredka admits that such a conclusion dominated his ideas for many months. It had all the force of *post hoc, propter hoc*, and all the fallacies. When, two months after the first ingestion of the virus, another dose of the virus was given to the rabbits or horses, and the operation again repeated two months later, it was found that the agglutinating power of the serum had sunk from 1 in 20,000 to 1 in 200 or 400, and that the protective power had vanished. Nevertheless, the rabbit, which ingested the virus on several occasions, and which had lost its antibodies gradually, had not lost its immunity. Inoculated intravenously with certainly fatal doses, it escaped the infection. What, therefore, was the value of the antibodies present in the serum after a first ingestion of the virus? Had they really been an expression of immunity, or was their formation merely a concomitant phenomenon of the latter? Besredka unhesitatingly favours the second alternative. He thinks that, in the first ingestion, a part of the virus makes a breach in the intestinal wall, and, penetrating into the blood in the form of soluble endotoxin, calls forth there the antibodies in question. The other part of the vaccine remains in the intestine; coming into contact with the closed follicles laid bare by the action of the bile, it vaccinates the intestine. When a second ingestion occurs, the vaccinated intestinal wall, impermeable to the virus, allows no more to pass into the blood. The antibodies previously existing are gradually eliminated. At each new ingestion the intestinal barrier becomes more and more "watertight," and all the while the antibodies in the circulating blood are diminishing. Thus one can conceive an animal actively and solidly vaccinated without having in its blood a trace of antibody. This is in opposition to the prevailing bacteriological opinion, which not only does not dissociate immunity and the antibodies, but goes so far as to consider the agglutinins and other antibodies as measures of immunity. Besredka, during his experiments, had several examples of the absence of parallelism between antibodies and immunity. For instance, in some rabbits which had not previously been sensitized with bile the ingestion of living paratyphoid virus brought about the abundant production of specific agglutinin of high titre, but when these animals were submitted to inoculation with the living virus they succumbed just as quickly as the controls.

Vaccination by Means of Heated Vaccine.

Some attempts to vaccinate the rabbit *per os* (without previous preparation) by means of living cultures were unsuccessful; there seemed to be reason for expecting a set-back when endeavouring to vaccinate by means of heated cultures. Two rabbits were given killed paratyphoid bacilli by mouth, but one of these had in addition been treated with bile; three weeks later the two rabbits, as well as a fresh rabbit, were tested intravenously with a fatal dose of living organisms; only the animal which had ingested the ox bile survived this test inoculation. In another series the rabbits had no less than five abundant ingestions of paratyphoid bacilli spread over three months, the last ingestion being of living organisms, but when subjected to the intravenous test only the bile-treated animals survived. From these experiments it is concluded that though the animals have absorbed typhoid or paratyphoid bacilli once or on many occasions, whether the bacilli are alive or dead, no immunity results; whilst, on the other hand, a single ingestion of heated culture, preceded by administration of bile, suffices to confer immunity against the fatal infection. There is every reason to hope that by these means we shall arrive at a method of vaccination capable of being applied to the human subject because it is innocuous, and because it imitates the natural phenomena.

If one concludes that antityphoid immunity is not allied with the presence of known antibodies in the blood, the corollary follows that if any antisubstances participate in the establishment of immunity following oral vaccination, they are certainly not of the nature of the antibodies we have been accustomed to find in the serum. Perhaps the antibodies that ensure the immunity in the rabbits are to be found elsewhere. Ought we not, therefore, to revise our present ideas on the subject, and seek for the cause of the immunity in the vaccination of certain cells of the intestinal wall—for example, those of the closed follicles? Some of Besredka's experiments showed that the immunity was established in the first three days after the ingestion of the vaccine—a result so rapidly produced as to exclude the participation of antibodies of any known order. What is certain is that the reaction of defence, whatever be the mechanism, does not occur in the blood, but elsewhere.

The normal rabbit not prepared by bile is indifferent to the ingestion of typhoid or paratyphoid bacilli, either living or dead, and it would seem clear that this indifference is due to the fact that the normal lining mucosa of the intestinal wall is interposed between the bacilli and the sensitive cells. Not being able to come in contact with the latter, the organisms are borne along through the canal; this is natural immunity.

One may now consider the case of rabbits prepared by bile and see how they react after the administration of the living and of the dead virus. In the former case the virus, having arrived at the small intestine and profiting by the breach in the mucosa, reaches the receptive cells directly, as they have been uncovered by the action of the bile. If the dose of virus is too strong it overflows the receptor apparatus and, becoming disseminated, provokes a fatal infection; but if the virus is present in feeble quantity the receptor cells arrest it, destroy it, digest it, and in so doing vaccinate themselves. Should a new dose of infecting material come along by the alimentary or vascular routes, the whole of this virus will be restrained by the vaccinated receptor cells. When a quantity of dead virus is administered orally to a prepared rabbit, the virus enters into direct communication with the uncovered receptor apparatus, the bacilli are engulfed and digested, and there results a vaccination of the intestine which is also that of the whole body.

The mucosa of the intestine is thus a barrier with a double property: it is potent in assuring natural immunity, but is an obstacle to the establishment of artificial immunity. To produce the latter it is necessary to bring the bacilli into immediate contact with the receptor apparatus to break down the separating barrier. For this purpose Besredka employed ox bile, but one can conceive the possibility of attaining the same end by other means. In his experiments in the production of immunity by the oral route in the case of dysentery bacilli he did not need to have recourse to bile, because the dysentery bacilli themselves had a marked desquamating property for the intestinal mucosa. In the case of typhoid and paratyphoid bacilli, on the other hand, the use of bile was rendered necessary because, in the rabbit at least, these organisms do not possess in themselves the power of opening up a passage to the receptor cells. There are possibly other organisms which, absorbed by the mouth, traverse the intestinal canal, and are eliminated without leaving any trace, but which, if the canal had been prepared for them, would not have failed to confer immunity on their host.

THE committee of the Robert Koch Institute for Combating Tuberculosis has given 15,000 marks to the Robert Koch Institute for Infectious Diseases at Berlin, 6,000 marks to Professor Selter of Königsberg, and 8,000 marks to Professor Flügge of Berlin.

THE *American Journal of Obstetrics and Gynecology* will make its appearance next month in place of the *American Journal of Obstetrics and Diseases of Children*, which discontinued publication in February. The new publication will be the official organ of the American Gynecological Society, the American Association of Obstetricians and Gynecologists, and the obstetrical societies of New York, Brooklyn, and Philadelphia.

British Medical Journal.

SATURDAY, SEPTEMBER 11TH, 1920.

RECENT INVESTIGATIONS IN ENTERIC FEVERS.

THE discovery of specific antibodies in the blood in infectious diseases—the agglutinins, precipitins, complement deviating substances, and the rest of them—has been productive of an immense amount of work by pathologists. It has generally been accepted that these specific substances are not only evidences of the operation of a defensive mechanism but are themselves directly defensive in nature. It is even widely believed that the powers of resistance of an individual to infection can be measured by the quantity (or rather strength) of these substances in the serum. One school of investigators in particular would seem to regard the degree of immunity as expressible by exact mathematical formulae. It is granted by most people, however, that the body must have many other means of resistance to infection than can be expressed in the terms of humoral pathology; some of these are known or suspected, others await discovery. The whole question, for example, of what constitutes natural immunity or resistance to infection has been barely trenched upon by investigators. Natural immunity and induced immunity do not necessarily run on the same lines. And there can be no doubt that local, as contrasted with general, immunity is an important factor in the struggle against infections.

It may be that in the intensive cultivation of this domain of pathology the necessarily indirect studies of the problems of immunity have obscured the greater problems that could only be solved by direct experiments. In no case is this more strikingly illustrated than in the group of enteric infections—typhoid and paratyphoid fevers, dysentery, cholera, and the rest. At the very beginning the investigator was faced with the impossibility of reproducing experimentally in animals a diseased condition that closely resembles the natural infection in man. Certainly pathological conditions could be induced, following the injection of the causative organisms, that resembled the human infection in certain features, but the complete clinical and pathological pictures were never reproduced. It is true that several years ago Metchnikoff succeeded in causing fairly typical typhoid fever in chimpanzees by the oral administration of the typhoid virus, but naturally no very extensive series of experiments could be conducted in these animals. Shortly before his death the same observer was able to produce fatal paratyphoid fever in newborn mice by feeding them on cultures of *B. paratyphosus*. No matter how the usual laboratory animals were prepared beforehand they proved resistant to the oral administration of all organisms of the enteric and dysentery groups. The prevailing conception of bacteriologists, indeed, has been that in the case of the enteric fevers the condition is a localized septicaemia.

The recently published work of Besredka, which we have summarized at pages 325[1] and 402,[2] shows that these diseases are primarily local, the septicaemia being a secondary phenomenon. The defensive mechanisms are, according to him, essentially local in the intestine; and the production of antibodies in the blood is quite a subsidiary occurrence, not essential to successful combat with the infective agent. The oral administration of killed or living cultures of the enteric organisms is not generally followed by any noticeable diseased condition, and no antibodies may appear in the blood. In the case, however, of dysentery bacilli clinical dysentery may be produced and may give the pathological features of the disease even with killed cultures. But in all cases the previous administration of bile, innocuous by itself, so sensitizes the intestinal mucosa that when living cultures of typhoid, paratyphoid, or dysentery bacilli are ingested the typical diseased state, comparable to that in man, is reproduced. If, again, subsequently to this sensitizing administration of bile, the organisms are injected intravenously, intramuscularly, or subcutaneously, the diseased process becomes localized in the intestine. No matter what the portal of entry of infection may be, the sensitized animal always responds in one way—namely, by showing intestinal lesions. It is not to be supposed that ox bile is the only thing that is capable of so irritating the intestinal mucosa that the bacteria ingested may lodge there and do their damage; in fact, in the case of dysentery the organisms themselves would seem to be capable of creating the necessary weakening of the intestinal defences, and probably many other irritants might produce the condition. Besredka found that animals which thus contracted the disease and recovered were solidly protected against subsequent infection, and this in spite of the fact that their serum might show no antibodies nor protective substances of known nature. He has advanced his researches to the point where further progress lies within the province of the clinician.

During the war all the contending armies suffered extensively from epidemics of bacillary dysentery. No successful method of protective vaccination was evolved. Subcutaneous inoculations of killed dysentery bacilli were early tried in the Russian army, but had to be given up because the benefits of the method were judged to be out of proportion to the accidents observed resulting from such vaccination. In Germany a sort of sensitized vaccine composed of bacilli, toxin, and antitoxin was employed, but afterwards abandoned. In our own and in the French army vaccination was tried on a small scale, but it was generally agreed that the toxicity of the vaccine was too great. The oral administration of killed cultures, though innocuous, did not seem to hold out any promise, because no reaction was produced and no antibodies appeared in the serum.

Besredka has now shown that in the case of dysentery, especially when some method of intestinal sensitization is induced, as by ox bile, the ingestion by the mouth of killed cultures does set up a complete protection against the natural infection, though no signs whatever of this immunity are otherwise apparent. The same thing applies in typhoid and paratyphoid infections. It would seem from the laboratory experiments that oral vaccination by killed cultures of the micro-organism, provided the recipient is suitably prepared, is productive of a much stronger immunity than subcutaneous inoculation, and is less likely to produce general reactions. If the application of these researches to man is followed by the results which experiment forecasts, the epidemics of cholera and dysentery, to say nothing of typhoid and paratyphoid fevers, may lose their terror.

[1] BRITISH MEDICAL JOURNAL, August 28th, 1920.
[2] BRITISH MEDICAL JOURNAL, September 11th, 1920.

HEALTH AND THE LEAGUE OF NATIONS.

THE Council of the League of Nations during its meeting last month at San Sebastian gave attention to the problem of international health, and adopted the scheme drawn up by the International Health Conference held in London last April. That conference was convened by Dr. Addison, at the request of the Council of the League of Nations. The constitution then drafted for an international health office under the League provided for the establishment of a general committee, consisting of delegates appointed by the various nations, and of a permanent committee for executive purposes. This permanent committee would consist of members delegated by the Council of the League of Nations, of the president and four members of the General Committee, of a representative of the League of Red Cross Societies, and of a representative of the International Labour Office set up under the League of Nations. The permanent committee would apply itself to drawing up new conventions or revising those that exist; the results being subject to the approval of the General Committee, wherein the vote of a two-thirds majority would be valid. The International Health Bureau would consist of an international staff under a medical secretary, who would be the chief executive officer. This important office, it is supposed, will be filled by a medical man with great experience in public health administration.

The functions of the health organization which it is thus proposed shall be set up under the League of Nations are: (1) to advise the League on matters relating to health; (2) to co-ordinate the work of national health administration; (3) to organize rapid interchange of information on epidemic diseases and rapid action where such information affects several countries; (4) to initiate or revise international agreements for administrative action in health matters when so requested; (5) to co-operate with the International Labour Office for the protection of workers against industrial diseases and injuries; (6) to co-operate with the League of Red Cross Societies in measures against world-wide epidemics; (7) to give advice on large questions of hygiene to other authorized voluntary organizations; and (8) to organize health commissions when requested. The general expenses of administration would be borne out of the consolidated funds of the League of Nations; extraordinary expenses by the Council.

This scheme has now been adopted by the Council of the League, and is recommended for formal adoption at a general assembly to be held in Geneva next November. It has been restricted, probably wisely, to main outlines such as are indicated above. Subject to certain general and unexceptionable principles, the practical working and orientation of the future international health office are left to be determined by the expert organization itself as soon as it has been formally set up. Care will obviously have to be taken in this regard to differentiate the functions which are to be fulfilled by this body, representing the national official public health services, and those which are already fulfilled by various international medical conferences and congresses, and by the new League which has united the Red Cross services in the different countries for purposes of international health work, and is also to have its head quarters in Geneva. The fact that the League of Red Cross Societies is to have special representation on the official body may, however, be taken as a guarantee that this important question will not be lost sight of. In this country we have daily experience of the necessity of voluntary and non-official work as a stimulant to and corrective of the functions of Government offices. The latter, however, are for many purposes a necessity, and without them the most devoted voluntary work would be of little avail. A like process of mutual adjustment will be required in many international affairs, including questions of public health.

SPIROPTERA CANCER IN MICE.

ATTENTION has already been drawn in our pages to the experiments of Fibiger of Copenhagen, in which he succeeded in producing carcinoma of the stomach and of the tongue by feeding black-and-white rats with the nematode *Spiroptera neoplastica*. In these experiments he obtained positive results in 53 per cent. of the cases, but it appeared to be extremely difficult to produce lesions either in other strains of rats or in mice, which offered in all probability as favourable conditions for the existence and development of the nematodes as were provided by the piebald rats. In the first series of experiments undertaken on mice,[1] spiroptera carcinoma was not produced in any one of the animals infected with the parasite, in spite of the fact that the spiroptera induced in the fundus of the stomach of mice exactly similar changes to those found in the stomach of the rats—proliferation, hyperplasia, and downward growth of the epithelium, as well as inflammation and papillomatosis. The experiments were conducted on a total of 207 white mice, some of which had been infected with the spiroptera for 597 days, a length of time exceeding that necessary for the production of carcinoma in the rat. However, in a later series of experiments Fibiger found 3 cases of spiroptera carcinoma in white mice; in one of these mice the tumour was very small; in the second, which died 410 days after the ingestion of spiropterae, there was found purulent peritonitis due to a perforation of the cul-de-sac of the stomach, which was the seat of a very extensive carcinoma infiltrating its wall. The structure of the carcinoma was exactly similar to that found in the rat experiments. The cancer itself as well as the rest of the fundus of the stomach contained nematodes. A metastatic nodule the size of a hemp-seed was discovered in the lung; it had the same structure as that of the primary tumour, but contained no spiropterae. Portions of the tumour transplanted into other mice failed to grow. The third case was that of a white mouse which had been infected with nematodes for 482 days before death and the excrement of which had shown spiroptera ova 322 days after the ingestion of the worms. Here the stomach was transformed into a nodular tumour of the size of a hazel-nut, a keratinizing epithelioma which completely invaded the greater part of the stomach wall and spread into the diaphragm, liver, and spleen. In the mesentery, the omentum, and the peritoneum there were numerous metastases similar in structure to the original tumour, reaching the size of a pea, and often invading the adjacent tissues. A spiroptera in perfect preservation was found in the stomach, but the metastases were quite free of parasites. Portions of a metastatic nodule were transplanted into twelve mice, with positive results in nine cases. The tumour was kept going for a year by successive transplantations, with approximately 50 per cent. success, and maintained its original histological characters and invasive properties. These transplanted tumours, which often attained the size of a nut in two to three months, contained neither spiropterae nor spiroptera ova. Thus the spiroptera carcinoma, which is much more difficult to produce in white mice than in piebald rats, shows a more intense development in the former, and the experiments just quoted derive considerable interest from the fact that proof has been furnished of the transplantability of spiroptera carcinoma. The result obtained from these

[1] *C. R. Soc. Biologie*, Tome lxxxiii, No. 26, 1920.

and previous researches by the same author may be summarized thus: Spiroptera carcinoma is a typical keratinizing squamous-cell carcinoma which invades the tissues and various organs, which produces metastases in the lungs, lymphatic glands, peritoneum, and perineural lymphatic vessels, and which is capable of being transplanted. The action exercised by the spiropterae is due, according to Fibiger, to their toxic secretion, which operates to bring about the cancerous development. Once produced, in the stomach or in the tongue, the carcinoma will continue to grow quite independently of the complete or partial absence of spiropterae in these organs. The parasites play no part in the development and the growth of the metastases and of the transplants.

THERAPEUTICS OF BENZYL COMPOUNDS.

By the pharmacological studies of Macht[1] the opium alkaloids were separated into a pyridin phenanthrene group and a benzyl isoquinolin group, of which morphine and papaverine were respectively the principal representatives. The alkaloids of the benzyl isoquinolin group, in contrast with those of the other, were found to lower the tone of non-striped muscle; this property was shared by benzyl benzoate and benzyl acetate, both of which appeared to be safe for clinical use, although, when taken by the mouth, the latter-named was somewhat irritating. Benzol has various poisonous effects, including a destructive action on leucocytes, but from a study of the action of benzyl benzoate in rabbits, Heller and Steinfield[2] find that the latter drug is devoid of toxic effect on the white blood cells, and that a wide margin of safety exists between its therapeutic and toxic doses. Macht found also that benzyl alcohol acts as a local anaesthetic; this has been confirmed by Hirschfelder,[3] who reports that saligenin (hydroxy-benzyl alcohol) is about twice as effective, and does not give rise to subcutaneous oedema nor irritation. The toxicity of this compound he reports as thirty times less than that of novocain; it has the advantage of being a stable, crystalline solid, and by using a 10 per cent. solution mucous membranes can be successfully anaesthetized. Both benzyl alcohol and saligenin are reported to possess antiseptic properties and, in 0.5 per cent. solution, to inhibit the growth of streptococci; both are vasodilators, and may therefore conveniently be used in combination with adrenalin. Hirschfelder is able also to confirm Macht's findings concerning the action of benzyl benzoate on smooth muscle, and gives a dispensing formula which disguises its objectionable taste. He reports good results from the use of benzyl benzoate in cases of cardiospasm, pylorospasm, and bronchial asthma. Litzenburg[4] has had a satisfactory experience of its use in cases of dysmenorrhoea. In a recent study[5] Macht found that benzyl benzoate gave relief in 150 out of a series of 200 cases of bronchial asthma; similar results have been obtained, he says, in 60 cases by Storm van Leewen of Holland. Macht has now recorded the effects of benzyl benzoate administered in 115 cases of whooping-cough,[6] occurring mostly in children. Of these 90 per cent. were improved, 50 per cent. to a marked degree. The drug acted as a palliative of the cough, but did not appear to shorten the course of the disease. It was given in water, and preferably in combination with a few drops of benzaldehyde; the doses used ranged from 5 to 40 drops of a 20 per cent. alcoholic solution. From pharmacological experiments the author concludes that in whooping-cough benzyl benzoate exerts a threefold beneficial effect; it diminishes the bronchial spasm which sometimes accompanies the paroxysms; it acts as a sedative for the laryngeal muscles (for the tone of striped muscle also is to a certain extent inhibited); and finally it has a slight anaesthetic action on the laryngeal mucous membrane, to which it may gain access after its excretion both in the salivary and bronchial glands.

[1] *Journ. Pharmacol. and Exper. Therap.*, 1918, pp. 389 and 419.
[2] *New York Med. Journ.*, July 31st, 1920.
[3] *Minnesota Med.*, August, 1920.
[4] *Journ. Amer. Med. Assoc.*, 1919, lxxiii, 101.
[5] *Southern Med. Journ.*, July, 1919.
[6] *Bull. Johns Hopkins Hosp.*, July, 1920.

CATS AND DIPHTHERIA.

THE commonly accepted belief that cats may suffer from diphtheria, and that they are a not uncommon source of infection in man, is disputed by Dr. W. G. Savage, Medical Officer of Health to the County of Somerset.[1] The evidence on which the belief was originally founded was both experimental and epidemiological. The lesions produced in cats by the inoculation or administration of diphtheria bacilli in the early experiments performed twenty or thirty years ago were so little characteristic, or open to such difference of interpretation, that they would not now be accepted by any pathologist. It was on the epidemiological side, however, that the foundation of the current belief was mainly established. The association of illness amongst cats with cases of human diphtheria has been noted by several observers; in a few cases swabs taken from the throats or lungs of these cats were reported as giving in direct films, more rarely in culture, organisms morphologically identical with the Klebs-Loeffler bacillus. The bacteriological details of all such findings are exceedingly meagre, and in no case were inoculation experiments carried out nor such information supplied regarding the cultural tests employed as would be necessary to establish the differences between such organisms and the large group of pseudo-diphtheria bacilli. Dr. Savage's investigations have been conducted along three lines of inquiry: (1) the bacteriological examination of the throat and nose of healthy cats not associated with any cases of human diphtheria; (2) the bacteriological and pathological examination of cats associated with human cases of diphtheria, and (3) experimental investigations with kittens. In the first part of the investigation none of twelve kittens examined showed any bacilli at all resembling diphtheria bacilli, but in two-thirds of the adult cats bacilli were found which bore a close morphological resemblance to the diphtheria bacillus. In one instance, in fact, the cultural characters were so typical that experienced bacteriologists could not detect the difference; the organisms were, however, non-pathogenic to guinea-pigs. It will thus be seen that cats harbour a diphtheroid organism which cannot be distinguished from the true diphtheria bacillus by the ordinary technique employed in the examination of throat swabs in the case of suspected diphtheria in the human subject. In five cases of human diphtheria investigated by Dr. Savage the cats showed similar organisms to the Klebs-Loeffler bacillus, in one case the similarity being so marked that the bacillus might possibly be regarded as a non-pathogenic strain of the true diphtheria organism. In the numerous experiments in which the throats of kittens were swabbed with known pathogenic strains of *B. diphtheriae* it was found impossible to infect them, although very massive doses were invariably used, as many as ten different strains being employed, all quite recently isolated from acute human cases of diphtheria, and four of them being shown experimentally to possess high virulence. No local or general symptoms were induced, and in four days they had practically all disappeared from the nose and throat. These experiments suggest that the secretions of the mucous membranes of the cat are peculiarly unfavourable to the growth of the diphtheria bacillus, and will not even permit it to remain as a saprophyte. The evidence therefore affords no support to the idea that the cat may act as a carrier of the bacillus in its throat and nose. That the fur of this animal may be infected with diphtheria bacilli is, of course, a possibility,

[1] *Journal of Hygiene*, vol. xviii, No. 4, 1920.

but in view of the low resistance powers of the organism this is probably an unimportant factor in the spread of the disease.

A GERMAN INSTITUTE OF PSYCHIATRIC RESEARCH.

IN Germany one person in 500 requires asylum care, and Professor Kraepelin[1] of Munich considers that at least twice as many persons suffer from mental disorder in some form. In addition, there is an unknown and uncontrollable number of degenerates engaging the attentions of the police. He points out that asylums are primarily for the care of the insane, and that asylum workers are chiefly occupied in clinical and administrative duties and have no time for research. The author claims that the proper conditions for research work can only be realized in specially equipped institutes adequately endowed. Such an institute is already in being at Munich, and it is expected that money will be forthcoming from private sources to provide a large new building on a site already given by the city authorities. Five departments exist—three for anatomical work and one each for serology and statistical research. Distinguished scientists control the departments and enjoy complete independence. Departments of psychology and biochemistry are projected, together with a very complete library. As a result of considerable endowments it is hoped to engage suitable collaborators and to provide facilities for scientific journeys and investigations in foreign countries. Professor Kraepelin sketches a large field for research, including the influence of poisons such as syphilis and alcohol on the organism, and the nature and origin of dementia praecox, epilepsy, and the manic-depressive states. He anticipates that much progress will be made in these problems from researches in serology, biochemistry, and endocrinology. Degeneration presents another wide field, in which aid will be sought from large collections of statistics concerning the prevalence of mental disease, epilepsy, deaf-mutism, vagrancy, prostitution, alcoholism, and syphilis. The work was begun in April, 1917, and means are being found to carry it on and extend it, and to link the institute with a new hospital for the insane which the city of Munich proposes to build.

[1] *Journ. of Nervous and Mental Diseases*, June, 1920.

THE ROYAL EARLSWOOD INSTITUTION.

WE welcome the appearance in pre-war form of the seventy-third Annual Report of the Royal Earlswood Institution for Mental Defectives. Like other charitable institutions, it had suffered severely from the financial stringency of the last five years, and a burden of debt to its bankers, amounting to £20,000, had been incurred; but the Board of Management are now able to announce with thankfulness the rehabilitation of their resources by the opportune receipt of a munificent legacy from an old subscriber (Mr. W. M. L. Ray), which it is hoped will enable them to pay off their debts and to proceed with urgent repairs and improvements hitherto of necessity in abeyance. The Board justly point out that, in spite of the provision by public authorities contemplated by the Mental Deficiency Act, there will still exist a scope for benevolent effort in giving increased facilities for the reception of cases of mental defect among the professional and middle classes—the *nouveaux pauvres* of to-day—and they are modifying their arrangements with this object in view. The report for the year 1919 of the medical superintendent, Dr. Charles Caldecott, gives the following statistics: The total admissions and readmissions had numbered 67 (51 males, 16 females); discharges 37 (31 males, 6 females); and deaths 50 (36 males, 14 females). The number resident on January 1st, 1919, had been 455 (288 males and 167 females), and on December 31st 435 (272 males and 163 females), the average number resident during the twelve months having been 446 (280 males and 166 females); 41 (65 per cent.) of those admitted were under 14 years of age. Eight were of the Mongolian type, 2 hydrocephalic, and 9 suffered from epilepsy, and 10 from paralysis. Of the 50 who died during the year, 15 (30 per cent.) succumbed to influenza, 13 (26 per cent.) to tuberculosis (in various forms), and 4 (8 per cent.) to senility. *Post-mortem* examinations were made on 34 cases (68 per cent.). The percentage death rate calculated on the average number resident had been 11.2, and it is stated that the mortality had more than doubled during the war, a lower standard of vitality being attributed to food restrictions and to the depressing effects of "blocked windows" (necessitated by D.O.R.A.), and consequent interference with normal lighting and ventilating arrangements. Dr. Caldecott considers that at least one-quarter of the present inmates must be regarded as "hospital cases," and he urges an amplification of the existing infirmary accommodation, including balconies for open-air treatment. It must be remembered that the activities of Earlswood have now extended over nearly three-quarters of a century, and it is stated that 15 of the present inmates have been in residence for fifty years, 4 for sixty, and one for sixty-eight years. Senile cases must consequently be expected to swell the mortality; while continuity of care, which is favoured by facilities for re-election and for life payments, is a valuable feature of administration. The arrangements for tuition at school, industrial training and recreation have undergone extension and improvement, and we trust that this pioneer institution will continue to occupy a leading position amongst the numerous agencies for dealing with defectives which have more recently come into existence. We note with satisfaction that its clinical resources are utilized for the instruction of medical students and post-graduate classes, for which its proximity to London offers advantages.

TYPHUS IN POLAND.

MR. BALFOUR, on behalf of the Council of the League of Nations, of which he is President, has addressed to the various Governments an appeal for £250,000 to combat typhus fever in Poland and Galicia. He describes the wide prevalence of the disease at the present time in Russia and Poland, and quotes authorities to the effect that unless adequate steps are taken at once the epidemic is likely to be far more lethal in the coming winter than in the winter of 1919–20. Mr. Balfour details the reasons which make the prevention of such a disaster a matter which concerns all nationalities. In the first place, economic conditions in Poland and Galicia cannot be stabilized while the population is threatened by typhus. Secondly, if the development of typhus be not checked it may well overrun Central Europe, where every circumstance is in its favour. As infection spreads it becomes harder to deal with, and no European country can count itself wholly safe if Poland be allowed to succumb. Lastly, there is the claim of humanity; Poland is the victim of circumstances for which she is not responsible. According to the statement of the Polish Minister of Health, there were last year 229,821 cases of typhus in Poland and Galicia, with 19,904 deaths. In contrast with the conditions obtaining in Russia, where the enforcement of preventive measures meets with great hostility from the inhabitants, the natives of Poland are anxious to co-operate in the extinction of typhus, and have organized a Polish Red Cross Society, as well as a number of special hospitals. The commission sent to Poland by the League of Red Cross Societies has received during this year gifts or funds from the Red Cross Societies of almost every European nation, and has done useful work in co-ordinating the most important of the relief agencies. We alluded on August 21st (p. 286) to the successful control of typhus outbreaks in Italy and Serbia. As

Mr. Balfour remarks, the plan of operation is complete, the organization is ready, and the methods to be employed are successful and well understood. It appears, however, that the appeal for assistance issued last May has met with but scant success, and the Council of the League of Nations now repeats it with emphasis.

TRAUMATIC NEUROSES COMMITTEE.

IN accordance with a promise made to Parliament some months ago a Departmental Committee has been appointed by the War Office "to consider the different types of hysteria and traumatic neurosis, commonly called 'shell-shock,' to collate the expert knowledge derived from the service medical authorities and the medical profession from the experience of the war, with a view to recording for future use the ascertained facts as to its origin, nature, and remedial treatment, and to advise whether, by military training or education, some scientific method of guarding against its occurrence cannot be devised." Lord Southborough, G.C.B., is Chairman of the Committee, and the other members are: Temporary Surgeon Lieutenant Thomas Beaton, O.B.E., M.D., M.R.C.P. (representing the Admiralty); Dr. J. L. Birley, C.B.E., F.R.C.P. (representing the Air Ministry); Dr. C. Hubert Bond, C.B.E., F.R.C.P. (representing the Board of Control); Dr. Maurice Craig, F.R.C.P. (representing the Ministry of Pensions); Wing-Commander Martin W. Flack, C.B.E., or Wing-Commander J. McIntyre, M.C. (representing the Air Ministry); Dr. H. W. Kaye (representing the Ministry of Pensions); Dr. Hamilton C. Marr (representing the Board of Control for Scotland); Surgeon Commander E. T. Meagher, R.N. (representing the Admiralty); Brigadier-General J. G. S. Mellor, C.B., C.M.G.; Sir F. W. Mott, F.R.S., M.D.; Major A. D. Stirling, D.S.O., and Colonel W. A. Turner, C.B., M.D. (representing the Army Medical Department); Mr. Stephen Walsh, M.P., Major W. Waring, M.P., and Major W. R. Galwey, O.B.E., M.C. (Secretary). The first meeting of the Committee was held on September 7th at the War Office, with Lord Southborough in the chair, and the method of procedure was laid down.

PRIMARY TUBERCULOSIS OF THE SPLEEN.

H. KOETTLITZ[1] records a case of primary tuberculosis of the spleen in a woman aged 24 years. The diagnosis was made mainly on the grounds of a positive cutaneous tuberculin reaction. The patient had cyanosis, but the highest red blood count was 5,900,000, which subsequently fell to 2,100,000. There were 750,000 platelets, as compared with 200,000 to 400,000 found normally. The author considers this primary tuberculosis of the spleen very rare, but in his account of the disease does not refer to Winternitz's (1912) review of the subject with 51 collected cases, and he is opposed to splenectomy, which is usually considered to give good results. The association of primary splenic tuberculosis with polycythaemia is certainly rare, and reference is made to cases reported by Lefas, Sorri, and by Widal and Rendu. Koettlitz compares primary tuberculosis of the spleen with Osler-Vaquez disease or splenomegaly with polycythaemia and cyanosis, and calls attention to the general similarity of the symptoms and to the increased blood platelet count in both.

FRACTURES OF GREAT TOE SESAMOIDS.

FREIBURG[2] is of the opinion that certain painful disabilities of the foot are due to injuries of the sesamoid bones on the inferior aspect of the metatarso-phalangeal joints of the great toe. That these bones are liable to fracture has been known for many years, yet there are few references to the fact in the standard textbooks and the possibility is apt to be forgotten. Of the two sesamoids the internal is that most frequently damaged. The fracture may be produced by direct violence (as when the foot is run over by a wheel) or by indirect violence, the toe being violently extended and abducted. In the latter case the mechanism of fracture bears a close similarity to that of fracture of the patella. The bone may be broken into two or more pieces. The result of the break is a swelling of the great toe joint, with pain on standing or walking. Tenderness is characteristic by reason of its location over the internal sesamoid. Treatment is best undertaken on conservative lines: a thick felt pad being strapped to the foot just behind the metatarsal head, and a bar being placed across the sole of the boot. Difficulty in the interpretation of radiograms arises from the fact that the sesamoid bones are sometimes congenitally bifid. A comparison with the sound foot is then helpful, together with the fact that the bone segments are apt to have a rounded outline, and to have a complete casing of compact bone. Good radiograms are essential to correct interpretation.

[1] *Le Scalpel*, June 12th, 1920.
[2] *Journ. Orthop. Surg.*, Aug., 1920.

PAYMENTS IN THE LONDON HOSPITAL.

THE experiment by the London Hospital of making a charge to all patients except those obviously not in a position to contribute has, according to the last quarterly report of the house committee, proved successful. The charge is one guinea a week for adult patients and half that amount for children between the ages of 7 and 14. The amount received is about £50 a day. About 10 per cent. of the patients are exempted on the ground of poverty. In July 1,137 patients were admitted; of these 660 adults and 99 children paid, and 107 patients were exempted. No charge is made for children under 7. The committee's report admitted that it was at present too soon to form any opinion as to whether the system of payment would cause voluntary contributions to diminish. Reference is also made in the report to the fact that the hospital at present receives no payments from the insurance funds for insured persons admitted to hospital.

POST-GRADUATE COURSE AT ST. ANDREWS.

A SHORT course of post-graduate study for general practitioners will be given at the Clinical Institute, St. Andrews, Fife, under the direction of Sir James Mackenzie, commencing on Monday, October 11th. The course, to which only a limited number of members will be admitted, will consist of lecture demonstrations dealing with the symptomatology of disease in its early stages, and will be supplemented by demonstrations on matters of clinical interest in anatomy, physiology, chemistry, bacteriology, ophthalmology, and radiology. The fee for the course is £10 10s. Graduates desirous of attending this course should communicate as early as possible with the Secretary, the Clinical Institute, St. Andrews, who will send them full particulars, and will be glad to advise them with regard to securing rooms in St. Andrews.

THE International Society of Surgery, at its recent meeting in Paris, elected Sir William Macewen, of Glasgow, as its President for the next congress, to be held in Great Britain—probably in London—during the summer of 1923.

BY a Royal Charter dated June 9th, 1920, the Incorporated Society of Trained Masseuses and the Institute of Massage and Medical Gymnastics were amalgamated. The council, of which Sir E. Cooper Perry, M.D., is chairman, includes the founders of the Incorporated Society and of the Institute, as well as sixteen elected members and eight co-opted members, of whom five are medical men. The Queen has consented to become patroness. The object of the chartered society is to afford protection to the profession of massage and its registered members by improving the training and status of masseuses and masseurs, by providing and supervising independent examinations, by setting up registers of persons qualified to practise, and by arranging post-graduate courses, lectures, and conferences.

Scotland.

SMALL-POX AND TYPHOID FEVER IN GLASGOW.

THE Medical Officer of Health of Glasgow has recently published a report upon the small-pox epidemic, bringing the history of the outbreak up to August 21st. Up to that date 446 patients had been admitted to hospital—433 from within the city and 13 from adjoining areas. There were 120 children under 15 years of age, of whom 91 were unvaccinated. None of the remaining 29 children who had been vaccinated in infancy died, but 31 of the unvaccinated group died, giving a percentage death rate among unvaccinated children of 34. Among the 326 patients in the group aged 15 years and over, 8 were unvaccinated, 6 of whom died. Vaccination was doubtful in 5 cases, one of whom died. Of the remaining 313 patients vaccinated in infancy 51 died; a few patients in this group had been revaccinated in 1901 (during the epidemic then); but in no case admitted to hospital has there been any evidence of successful vaccination since 1901. Further, so far no cases had occurred among the medical, nursing, or administrative staff engaged in dealing with the patients. An interesting table is as follows:

	No. of Cases.	Deaths.	Mortality Rate.
Vaccination in infancy ...	342	51	15%
Unvaccinated	99	37	37%
No definite evidence of vaccination	5	1	20%

During the early weeks of August it seemed as though the epidemic were dying out, but during the third week 18 cases were admitted, and this recrudescence was accompanied by an extension of the area from which the cases came. Up to September 1st the admissions have been about two or three a day, but on September 2nd they numbered five, and on the 3rd four. Two suspected cases occurred in Edinburgh at the end of August; both were adults who had not been vaccinated since infancy; but neither of them seemed to have been in direct contact with Glasgow.

During the week ending August 21st there were 13 cases of enteric fever reported in Glasgow, and all the patients had been spending the Fair holidays at seaside resorts. The partaking of infected ice-cream is suspected to have been the origin of these cases. A few further cases have been intimated.

ANDERSON COLLEGE, GLASGOW.

The Governors of the Anderson College of Medicine, Glasgow, have appointed Dr. William Hislop Manson to the Chair of Ophthalmic Medicine and Surgery. Dr. Manson, who graduated in medicine at Glasgow University in 1906, and was admitted in 1912 as a Fellow of the Royal Faculty of Physicians and Surgeons, Glasgow, has been for some time a visiting surgeon to Glasgow Eye Infirmary.

SCOTTISH BOARD OF HEALTH.

The National Health Insurance Commission (Scotland) has issued its last report, covering the years 1917–19, for its duties have been taken over by the Scottish Board of Health. The number of approved societies in Scotland for National Health Insurance purposes was 245 in 1919, compared with 312 in 1912, and the total number of Scottish cards in August, 1919, was 1,275,029. The feeling evinced against compulsory insurance is stated to have greatly diminished or almost disappeared. Maternity benefit has been highly popular; there is abundant evidence that it has greatly helped mother and child, and there has been very little misapplication of this benefit. The Commissioners think there is some ground for uneasiness regarding the careful certification of illness as performed by some practitioners; and they express the opinion that medical referees should be appointed to whom doubtful claimants on the fund could be sent.

England and Wales.

NOTIFIABLE INFECTIOUS DISEASE IN 1919.

IN continuation of the annual statements of the Local Government Board (1911–18), the Ministry of Health has published a report on "The incidence of notifiable infectious diseases in each sanitary district in England and Wales during the year 1919."[1] The volume is mainly occupied by a statement of the total notifications (together with their incidence rate per 1,000 of population) of small-pox, scarlet fever, diphtheria, enteric fever, puerperal fever, and erysipelas. These figures are tabulated for each borough, urban, or rural district; for rural and for borough and urban districts within each administrative county; and for county boroughs and administrative counties. The naval and military cases are given as total notifications of each disease in England and Wales. The total notifications in England and Wales were: Small-pox, 294, as compared with 63 in 1918; typhus, 3 cases; scarlet fever, 82,398 (almost twice as many as in 1918); diphtheria 53,918, erysipelas 15,763, cerebro-spinal fever 848 (these three diseases showed slightly greater incidences than those of the previous year). Enteric fever (3,447 notifications) was rather less prevalent in 1919 than in 1918. Notifications of poliomyelitis were 553, as compared with 228 in 1918, 357 in 1917, and 689 in 1916; of encephalitis lethargica, 538, and of polio-encephalitis, 62. There were 45,260 notifications of acute primary and acute influenzal pneumonia in the last three quarters of 1919; and during the same period 1,657 of dysentery, 99 of trench fever, and 14,483 of malaria. The majority of the notifications of these three diseases are stated to relate to recurrent attacks in men who had contracted the maladies abroad, but 93 cases of malaria appear to have been notified, after March 1st, as contracted in Engalnd. Notifications of measles and German measles together numbered 269,111. Ophthalmia neonatorum was reported in 8,648 cases—2,116 more than in 1918. There were 12 cases of plague—8 in the Port of London and 2 each at Liverpool and Bristol.

In view of the figures given in the Registrar-General's Report for 1918,[2] when the tuberculosis mortality of the civilian population was in excess of that recorded for any year since 1904, special interest attaches to the notification of tuberculosis in 1919. In that year 65,229 cases of pulmonary tuberculosis were notified, 7,512 fewer than in the previous year; the notifications per 1,000 of population numbered 1.81 in 1919, compared with figures ranging from 2.10 to 2.20 in 1914–18. In non-pulmonary tuberculosis a like reduction was shown; there were 16,821 notifications in 1919—2,570 fewer than in 1918; the rate of notifications per 1,000 population, which was almost constant at 0.66 from 1914–17, and was 0.58 in 1918, fell in 1919 to 0.47. It must be remembered that, especially in London, there are many duplicate notifications. The report gives also a tabular statement of the incidence, week by week, of scarlet fever, diphtheria, enteric fever, measles and German measles, cerebro-spinal fever, poliomyelitis, and encephalitis lethargica; the chief seasonal variations noted are, for scarlet fever and diphtheria, increased prevalence from September to December; and for measles, diminished incidence from January to April and in September and October.

A GIFT TO THE WELSH NATIONAL MUSEUM.

Dr. H. Drinkwater of Wrexham has presented a series of four hundred coloured drawings of wild plants, made by himself, to the Welsh National Museum, Cardiff. The drawings are of natural size, and Dr. Drinkwater, who is a very accomplished amateur artist, has used a dull green paper to afford a natural background, and has been extremely successful in producing a most brilliant effect—far more effective than had white paper been used. The collection is, we believe, unique, not only in this respect, but also in its completeness. Some years ago Dr. Drinkwater gave a series of 150 drawings to the Grosvenor Museum at Chester. Many of his friends have expressed the opinion that the collection now given to Wales should have found a place in the South Kensington Museum.

[1] Reports on Public Health and Medical Subjects. No. 2. H.M. Stationery Office. 1920. Price 1s. 3d. net.
[2] BRITISH MEDICAL JOURNAL, June 5th, p. 775.

Almost all the drawings, however, were made from plants growing in Wales, and the artist considered that their proper home was Cardiff.

ASYLUM WAR HOSPITALS.

Sir Marriott Cooke and Dr. C. Hubert Bond, the two Commissioners of the Board of Control, to whom at the request of the War Office were delegated in 1915 the duties concerned with establishment and supervision of asylum war hospitals in England and Wales, have addressed to the Secretary of State a comprehensive report.[1] In January, 1915, the Board prepared a scheme to supply the War Office with at least 15,000 beds; this was achieved by clearing some of the asylums of their insane patients and distributing them to other institutions. Five months later eight asylum hospitals, having been evacuated and having undergone the necessary adaptations, were receiving sick and wounded men from overseas. As the national shortage of hospital accommodation for military cases increased, other asylum hospitals were partially, or wholly, given up to military patients suffering from mental breakdown or nervous disease. The scheme when fully developed supplied twenty-four hospitals with 27,778 permanent beds, in which almost 500,000 sick and wounded men (more than one-sixth of the total number) were treated. It was a governing principle of the scheme that every person on the permanent staff of an evacuated asylum should be found a place in a corresponding war hospital. In nearly every case the medical superintendent became officer commanding and administrator to the hospital with temporary rank of lieutenant-colonel or major in the R.A.M.C.; surgeons and physicians practising near each hospital were secured as civilian visiting and resident surgeons and physicians. The mental and nervous cases accommodated up to May 1st, 1920, were 30,440; in order to avoid certification under the Lunacy Acts of those among this number who were insane, the military authorities decided to keep them, for as long as possible, in hospitals under military control. It is pointed out that the term "pauper," associated with county and borough asylums, conveys an altogether erroneous idea of the social status of the patients; the cost of their maintenance (at first in most instances a charge upon the guardians) is in many cases reclaimed wholly, or in part, from the patient or his relatives. It is surely a matter of congratulation, the Commissioners remark, that this accommodation should have been available in first-rate institutions, and that soldiers afflicted with the milder forms of mental breakdown or acute insanity should have their treatment directed by many of the highly qualified and experienced medical men on the permanent staffs of asylums.

Correspondence.

TREATMENT OF INCIPIENT MENTAL DISORDER.

SIR,—With reference to your observations in the issue of the JOURNAL of August 28th upon Clause 10 of the Ministry of Health (Miscellaneous Provisions) Bill, if you will allow me to say so, the criticisms of your last two paragraphs single out what appear to be the weakest points in the new provisions.

1. Any extension of the "voluntary boarder" principle I regard as a mistake. Insistence on the previous consent in writing of the person to be received will often act as a deterrent. Then there are the cases whose mental state is so disordered that they are not in a position to give or withhold consent. The disorientation, the incapacity to form a judgement or take a decision, are evident, yet the disorder may fairly be considered as "incipient in character and of recent origin." Is the door of a psychiatric clinic to be "banged, bolted, and barred" on these? If so, where is the medical student of the future to study them? It seems unfair to both parties to compel them to journey out to the asylum.

2. As regards the provision by which a person who "has been certified as a lunatic" is ineligible for treatment under the new conditions, is it possible this can mean that a person shall not be admitted to the new institutions and homes concerning whom there are in force certificates under the Lunacy Acts? Upon first reading the clause, as a plain man accustomed to understand plain English "as she is wrote," I naturally put the same interpretation as you do upon this proviso. I fear we must assume that this interpretation is correct, notwithstanding that it might well puzzle all the notaries in Padua to explain why persons aforetime certified under the Lunacy Acts, and recovered, are ineligible under the new conditions; are to be shuffled off as encumbrances on the march of progress. Those of us who have dealt with these cases—who are aware that large numbers of them need not have been certified under the Acts had the provision now contemplated been in existence, and who know that, in case of relapse, recertification and reconsignment to the asylum would be unnecessary were the provision in existence—anxiously await the reasons for this exclusion. Are these unfortunates, like the Board of Control, to whom access to the new institutions, etc., would be barred by some, looked upon as bespattered with unsavoury oils from the "machinery of the Lunacy Acts: as 'damaged goods'"?

Doubtless an early meeting of the Medico-Psychological Association and of the National Association of Mental Hospital Authorities will be called to consider the provisions of Clause 10.—I am, etc.,

EDWIN GOODALL,
August 30th. Cardiff City Mental Hospital.

PSYCHOLOGICAL ANALYSIS.

SIR,—I cannot complain if my remarks upon the subject of psychological analysis—which occupied an interval of about fifteen minutes and had to be condensed into as many lines—should fail to represent adequately what I stated or meant to state at the annual meeting of the Medico-Psychological Association in Buxton on July 28th, and reported in the JOURNAL for August 28th last.

I ventured to express the belief that the elaborately sexual interpretation of the origin of the psychoses after the teaching of Freud had ceased to have a vogue in this country, and for that reason Freudism was dead. I added that the exploration of the mind by psychological analysis was nevertheless very much alive, and that experience of the war had given a fresh atmosphere to the psychogenetic origin of the psychoses as well as of the neuroses. I fully acknowledged the help afforded by Freud in the examination of the mind, and mentioned the methods of free association, stimulus-reaction time and the interpretation of dreams, although I do not admit that the mind is an evolution of the dream life.

The normal life of ordinary individuals is one of constant restraint and repression (or, as some prefer, of suppression), and to attribute all abnormal nervous symptoms to repression and to mental conflict is not in accordance with experience. The self-preservative instincts themselves normally imply repression, so much so that the control of conflicting tendencies in the unconscious mind has to many become an intuition or an instinct.

I can state from experience that one of the most frequent mental symptoms of the neuroses and psychoses is a loss of memory for some recent past series of events, and these have been dissociated by some emotional shock, and not mainly through repression or suppression (conscious or unconscious), and it is not enough to restore this by any of the methods of mental exploration; it must be restored to the mind in its proper place and relation to the total cognitive systems. Some psychologists claim by psychoanalysis to have brought back in hypnosis the memory of the infant christening—a process which is futile, even if credible. Following upon exploration must be a rational readjustment by persuasion, suggestion and re-education—the "triple alliance."

It is not possible to explain mental processes upon a mechanistic or a material basis; the lowest and polymorphic layer of the cortex does not cause instincts, otherwise volition would be meaningless and motives would cease to have any agency, education would be useless, and high ideals would no longer have a place in the training of the young. Interaction (which the law of the conservation of energy does not sanction) will not explain the dominance of mental states over physical or bodily states, and the hypothecated parallelism is the statement of a fact and

[1] *History of the Asylum War Hospital in England and Wales.* Report to the Home Secretary by Sir Marriott Cooke, K.B.E., M.B., and C. Hubert Bond, C.B.E., M.D., D.Sc., F.R.C.P. H.M. Stationery Office. Price 9d. net.

not the explanation of the phenomena. The latter presupposes two separate universes—that of mind and matter, but how they act still remains an unsolved problem, as unsolved as those connected with that all-powerful entity, the unconscious mind, which, nevertheless, the psychoanalysts claim to have explored by means of symbols, mostly of sex, and which their code has so interpreted as to enable them to escape the vigilance of the mystic endopsychic censor.—I am, etc.,

ROBERT ARMSTRONG-JONES, M.D., D.Sc.

105, Harley Street, W., Aug. 31st.

ARMY COUNCIL CONSTITUTION.

SIR,—I desire to express my complete sympathy with the suggestions made by Colonel Broome Giles in his letter published on August 28th, drawing attention to the importance of having the D.G.A.M.S. placed as an actual member of the Army Council. I regard it as fundamentally necessary that he should be a permanent and definite member of this central council of war.

2. The following points may be of interest. Some years ago Viscount Esher, the originator of the Army Council idea, wrote to me urging me to secure the cancellation of the ruling laid down by his committee excluding the D.G.A.M.S. from membership of the Army Council. I did all I could to secure such a change, but was not successful.

3. I held for some years the post of surgeon-general to Field-Marshal Sir Evelyn Wood when he commanded an army corps. I had the most direct, the most complete, and the most definite access to this most able soldier and most brilliant administrator. It would be absurd to imagine that on vital questions affecting human life that I, the responsible adviser of the field-marshal, should have to approach him through any but the direct personal channel. I could not have done my work effectively without this definite right of access.

4. In the Indian administrative system the chief of the Indian Medical Department dealing with the crowded millions of Indians had no right of access to the Viceroy. This rule, laid down by the Indian Civil Service officials, remained in force until the lamentable breakdown in Mesopotamia in the recent war. Then, and then only by the public outcry at the lamentable conditions in Babylonia and the most fortunate presence of that very able Minister Mr. Montagu as Secretary of State for India, was the right of access granted to the Director-General of the Indian Medical Service, and that right he now enjoys. He personally can have access to the Viceroy. If only my dear friend Florence Nightingale were alive, it can be imagined in what scathing words she would express her opinion of the old-world War Office ideals.

5. Day by day sanitary science goes forward by leaps and bounds. Who, then, is to set a limit to its advance, and who is to bar the way to health progress in peace or war for humanity?

If this right is denied to the public health services of peace or war, newer and further steps must be taken to secure the just right of civil or military sanitarians to achieve their splendid aspirations. Fight the good fight with all thy might.—I am, etc.,

GEORGE EVATT,
Major-General A.M.S. (ret.).

London, S.W., Aug. 29th.

THE TREATMENT OF FRACTURES.

SIR,—I have read with great interest the letters on this subject by Dr. Wm. L. Griffiths, Sir J. Lynn-Thomas, and Dr. J. E. Bowser. As surgeon specialist on a hospital ship, officer in charge of a surgical division, and officer in charge of the R.A.M.C. splint factory in Egypt, it was my privilege to follow the methods and see the results of others. The 21st General Hospital was originally equipped for service in France, and had on the staff a mechanic specially chosen for the manufacture of splints. At a critical period in the war the hospital was sent to Egypt, and ultimately a very large factory was established for the manufacture of splints, etc. One of my predecessors, Major Hey Groves, in charge of the surgical division, introduced special splints of original design, which were largely used throughout Egypt, and in the hands of many surgeons gave excellent results. Some of his papers will be found in the *British Journal of Surgery*, 1916 and 1917, giving in detail the methods he adopted and his results.

I well remember on going round my division remarking to the medical officer in charge of a ward that a leg did not seem to be in very good position, and the reply I got was: "But I've put it up in a Hey Groves splint." Many cases of gunshot wound had been "bipped" before they reached our hospital at the base; we were much struck by the fact that the cases from one casualty clearing station showed uniformly good results, and it was very pleasing to find that the surgeon specialist was one of our own surgeons from Scotland; "bipped" wounds were not so satisfactory from some of the other clearing stations, and we saw many wounds treated by other methods showing excellent results. A well united fractured femur (gunshot wound) came down to us, and we passed the case on to England. It was the worst deformity I have ever seen, and had been treated by a pin through the lower end of the femur and direct extension.

These cases seem to show that the man behind the method is the essential factor. In the treatment of fractured femurs most excellent results can be obtained by the use of Hodgen's splint, but only when the principles of the method are fully understood, when daily inspection is made, and sufficiently frequent measurement taken.

While associating myself with Dr. Bowser in the hope that the wider questions raised may not distract attention from the practical suggestion as to an instructional tour by Major Sinclair, may I suggest that Divisional executives endeavour to arrange more frequent clinical meetings? There must be few areas which cannot claim to have members who have served overseas and who have had wide experience in the treatment of gunshot wound fractures. If we wait until something is arranged it may be a long time before the instructor reaches Scotland. In the meantime, by means of Branch and Divisional clinical meetings, the ground might be broken and our minds rendered more receptive by discussions on reform in the treatment of fractures and other clinical methods.—I am, etc.,

GEORGE R. LIVINGSTON, M.D., F.R.C.S.E.

Dumfries, Aug. 23rd.

SIR,—I should like, with your courtesy, to make a few observations on this important subject which has been so opportunely raised by Dr. W. L. Griffiths. I think everyone with experience of fracture surgery must agree with your correspondents that the present treatment of fractures, in and out of hospital, is too often extremely unsatisfactory to surgeon and patient alike, and that definite steps should be taken to bring the standard of treatment up to the high level attained by many of the special hospitals during the last year or two of the war.

It is interesting to reflect on the causes of this backwardness in fracture surgery, and one at least of these should be remarked on for the sake of future amendment. The recent developments in the operative treatment of fractures often tend to engender a half-hearted and indecisive attitude of mind in the surgeon treating a fracture in its early stages—a time of vital importance; he is apt to think that in cases of difficulty a ready solution can be found in the open operation, whereas the difficulty can generally be met more safely and much more easily by non-operative methods if simple equipment and proper organization are at hand.

The proposal that Major Sinclair should give practical demonstrations in the provincial centres is a very good one; if put into action it would certainly stimulate interest and discussion; at the same time it would be unfortunate if a widespread impression were created that elaborate mechanical devices and equipment were necessary for the proper treatment of fractures.

A system of treatment, as organized by Major Sinclair at Wimereux, splendid and beyond praise, might well prove a failure in the provincial hospitals, with their constantly changing resident medical and nursing staffs.

Surely the time is ripe for the creation in all the larger hospitals of special accommodation for fracture cases—in- and out-patients—under the charge of a special medical and nursing staff, the senior members of which should be appointed on such terms as would secure some continuity of service. So long as it is the custom in hospitals to distribute fracture cases throughout all the wards, and under

various members of the staff, so long will it be difficult to improve the standard of treatment. The heads of such special departments might, if necessary, obtain their knowledge and training by visiting the fracture departments already, or about to be, established in this country, for systematic courses of instruction. Some such system was created in 1918 by the War Office for training officers in charge of the newly established provincial hospitals for the treatment of fractured femur cases, and, I believe, answered very well.—I am, etc.,

Manchester, Aug. 23rd. H. H. RAYNER.

DRIED MILK DIETETICS.

SIR,—Dr. H. Leader raises four important and practical points in his directions for using dried milk (BRITISH MEDICAL JOURNAL, August 28th, p. 335):—

1. The necessity for explicit directions is appreciated by one firm of manufacturers, and this firm has adopted the formula worked out by Dr. A. E. Naish—namely, three heaped dessertspoonfuls to half a pint of water. In the discussion on my paper on dried milk as a food, at the Congress of the Royal Sanitary Institute at Birmingham on July 21st last, Dr. Millard, M.O.H. Leicester, drew attention to the importance of proper mixing in the reconstitution of the product. He stated that one firm of manufacturers had elaborated an apparatus which produced a product indistinguishable from boiled fresh milk. The apparatus was, however, not suitable for domestic purposes. In my experience, with sufficient expenditure of energy it is possible to produce a reconstituted milk which might easily pass for boiled fresh milk. All directions for the use of dried milk which I have seen fail in not laying sufficient stress on good mixing.

2. I quite agree with Dr. Leader that close medical supervision is essential in the hand-feeding of infants. I have insisted on this point in the fourth edition of my *Care of Children*, which is now in the press. Most medical men are too much inclined to leave details of "child-craft" to more or less experienced nurses, forgetting that the worst trained medical practitioner should know more about child welfare than the most highly trained nurse.

3. The need for standards for dried milk was insisted on by Dr. Rideal and other speakers at the discussion on my paper at Birmingham above referred to. It is a burning necessity, and should at once occupy the attention of the Minister of Health. The only thing possible now is to select a good brand of constant composition and stick to it.

4. The question of cane sugar raised divided counsels at the discussion above referred to. All medical officers of health agreed that milk powder kept well, but whilst some considered that the added cane sugar enhanced its keeping qualities, others were of opinion that it had a prejudicial effect in this direction. Personally I find that the added sugar improves the flavour of the reconstituted milk, and I have seen no bad results from its presence. If Dr. Leader uses dried milk as an invalid food to the extent to which I do, he will find that patients find milk powder free from cane sugar rather insipid and much prefer the sugared powder.

In speaking in support of my paper, the M.O.H. of St. Helens referred to the excellent results which he had obtained from dried milk in the dietary of typhoid fever. I am unable to find any reference to the use of milk powder in this disease either in the textbooks or current literature, and consider that in view of the character of the curd and the greater digestibility of the product than fresh milk, it should have a wide sphere of usefulness in the treatment of this disease.—I am, etc.,

ROBERT J. BLACKHAM, M.D.,
London, S.W., Aug. 30th. M.R.C.P.E., D.P.H.Lond.

PUERPERAL SEPSIS.

SIR,—To many practitioners the discussion on puerperal sepsis held at the annual meeting of the Association must have been disappointing. After the able and convincing paper of Mr. Victor Bonney it would be reasonable to suppose that the dogma of the modern physician being in any way responsible for puerperal fever would have been abandoned.

But although the practitioner stands acquitted of the charge of providing the organisms which cause puerperal sepsis, he is still accused of stimulating and displacing them. The theory is that his fingers remove pathogenic organisms from the entrance to the vagina, where they are harmless, to a site further up—say 2 in. higher—where they become extremely virulent, and this displacement is a common cause of puerperal fever. The fact that a large number of cases of puerperal sepsis occur in patients who have not been touched by doctor or nurse is sufficient to refute this absurd theory.

The truth is that in these days puerperal sepsis is in *every case* an autoinfection, and its incidence has no relation whatever to manipulations during labour. The reason why one patient contracts it and another does not is part of the general problem of individual incidence of infection, and of this at present we know little. It is impossible for anyone who has personally attended, say, a thousand labours to arrive at any other conclusion.

Prolonged tugging with forceps, manual removal of the placenta, extensive tearing, and the like, should in theory be followed by puerperal sepsis, yet it seldom occurs in general practice, and the bad case of puerperal fever is almost always one which the doctor has scarcely touched. Moreover, the fact that the rate of incidence of puerperal sepsis is practically the same in all civilized countries is almost conclusive evidence that the cause is entirely independent of methods of conducting labour.—I am, etc.,

Wanstead Park, E., Aug. 22nd. A. CAMPBELL STARK.

SIR,—In connexion with the subject of puerperal sepsis, dealt with at Cambridge and recorded in the JOURNAL of August 21st, I would like to give an outline of my own experience as a general practitioner during the past seventeen years. I have conducted something like 1,500 parturitions in that time. If any of my patients showed symptoms or signs of infection, likely to result in puerperal sepsis, I at once set about the simple method, as I was taught, of giving intrauterine douches with some antiseptic such as mercury biniodide, and latterly with lysol. I always gave the douches myself at least once a day, and often twice a day. I do not know what the present rate of mortality is in puerperal sepsis, but of all the confinements that I attended, only one died of this disease. A number of cases already septic which had been attended by midwives were thrown on my hands. One of these was moribund and died almost immediately. Another I sent into hospital; she also died. The rest recovered. I do not recollect ever sending one of my own septic cases into hospital. I am in accord with Mr. R. J. Johnstone, that many cases of puerperal sepsis are due to inflammation of parts other than the uterus, one part especially being infected lacerations of the vagina. Compared with the elaborate and cumbersome methods now advocated or experimented with, mine must seem old-fashioned and crude, but the proof of the pudding is in the eating. In my opinion the most important thing is to get at the cases early and to stick to them until better. I might add that I usually supplemented my treatment with quinine and ergot.—I am, etc.,

Bournemouth, Aug. 24th. J. M. LOVETT.

DEATH CERTIFICATES AND CORONERS' COURTS.

SIR,—In your issue of August 14th (SUPPLEMENT, p. 62) there is a very interesting account of a deputation from the British Medical Association to the Home Secretary and the Minister of Health, dealing with proposed changes in the laws relating to death certificates and coroners' inquests.

I note with satisfaction that Mr. Bishop Harman said that doctors should see the body in every case before giving a certificate of death, and that the British Medical Association felt that this was right and should be done. As things are now, the doctor who has attended the patient during the last illness need not see the body, and may accept the statement of an unqualified person as to the immediate cause of death. Mr. Harman's is a perfectly proper proposal, and it is to be hoped that it will be adopted, but I venture to suggest that it may be improved upon.

The doctor should be encouraged to apply tests of death, and a proper fee should be paid to him for his trouble. It is a curious fact that anyone wanting a *copy* of a death certificate has to pay a fee to the official for it, while the

original certificate itself is granted for nothing, and no one will deny that this is most unjust, as well as illogical and absurd. The proximate cause of death may be something outside the normal progress of the illness, and it is most important that a fully qualified person should make a careful examination to ascertain the immediate cause of death, and this is exactly what is *not* ensured by the present law. Why cannot the law be made more stringent on this point?

Mr. Bishop Harman, who was the chief speaker of the deputation, pointed out that the registrar of deaths could receive his information from bonesetters, herbalists, or other unqualified persons, or even from the accounts given by relatives, who might be quite uneducated persons; and the Home Secretary remarked that every uncertified death had to be reported to the coroner. Inquests, however, are rarely held except for grave reasons; and the weakness of the present system lies not in the laws affecting coroners and their courts, but in the inadequacy, and one might say absurdity, of a death certificate that means practically nothing. One might just as well have no certificate at all, as the present one is only a piece of paper that is a convenience to the undertaker.—I am, etc.,

Barnes, S.W., Aug. 26th. J. BRINDLEY-JAMES.

ANAESTHESIA IN TONSIL AND ADENOID OPERATIONS.

SIR,—Mr. Courtenay Yorke, in his note on anaesthesia in tonsil and adenoid operations (August 28th, p. 318) marks a very important step in the progress that is being made in this direction. Too often one hears it insisted upon that the proportion of deaths to administrations of choloroform and chloroform mixtures is very low (under the best conditions perhaps only 1 in 10,000). There should not be deaths from anaesthesia.

One should be able to inform parents not merely that the risk is small, but that it does not exist. Nitrous oxide and novocain are therefore the anaesthetics of choice in these operations, in spite of the greater dexterity required when gas is used.

With regard to enucleations in adults under novocain, I notice that Mr. Yorke makes no specific statement that the operation is painless. While it is certain that the pain of incisions can in normal tissues be abolished by novocain, yet in dealing with scarred tissues such as often surround the adult tonsil, it is not unusual to come upon tough areas which have resisted infiltration, incision of which is painful. Moreover, the dragging upon the tonsil necessary to its dissection gives rise to very unpleasant sensations. These disabilities may be overcome by combining novocain infiltration with nitrous oxide analgesia, as follows:

The tonsil bed having been infiltrated, one nasal passage is sprayed with 10 per cent. cocaine and adrenalin, and a vaselined rubber tube leading from a suitable gas apparatus is passed just so far into the pharynx as will not interfere with the movements of the soft palate. A gentle stream of gas is turned on, and the patient is instructed to breathe through the nose till he feels dreamy or drunken, but to prevent himself going completely under by breathing through the mouth when necessary. Patients—even girls in their 'teens—experience no difficulty in this manœuvre. Directions are cheerfully carried out (a great advantage over anaesthesia); and though consciousness is not lost, pain is not appreciated as such.

This combination may be employed with advantage in any intranasal procedures which give rise to jarring, the arrangement of the tube being varied with the requirements.—I am, etc.,

London, W., Aug. 29th. BEDFORD RUSSELL.

MEDICAL POLICE FEES.

SIR,—I write on behalf of our profession generally, but especially on behalf of police surgeons. Recently, when acting as locumtenent in London I was called on a Sunday afternoon, when every man should have the right of rest and recreation, to see a poisoning case at a police station. For this service I next day received a scrip for 3s. 6d. The City Police pay 5s. for a day call; for a night call only 7s. 6d., like the Metropolitan Police. The cases to which we are called are all serious, entailing great responsibilities. Every other duty has to be laid aside because the calls are urgent. The police avoid sending for us as much as possible to save their own exchequer. The remuneration is manifestly inadequate, and even unjust. The police themselves have received very definite increase of pay, and our section of police work should also be augmented.

The fee of 1 guinea for all inquests, and for *post-mortem* examinations, also needs revision. I hear that the undertaker gets £1 for the mechanical effort of removing the body.

I am told by Dr. Percy J. Clark, of Spital Square, Bishopsgate, E.C., honorary secretary of the Metropolitan Police Surgeons' Association, that a plea has been presented to the head quarters of the police authorities for 5s. for a day visit and 12s. 6d. for a night visit. I have no doubt that firm and continued action will bring about the desired result.

It is important that all concerned should take an active part in the matter. By inserting the above in our widely distributed JOURNAL attention will, I hope, be awakened, because the question affects the whole kingdom as well as the metropolis.—I am, etc.,

London, W., Aug. 29th. A. WITHERS GREEN.

TREATMENT OF GONORRHOEA IN WOMEN.

SIR,—I was much interested in reading Dr. Browdy's letter (August 21st, p. 295) on the treatment of gonorrhoea and its success in the female. I note that in his letter, though Dr. Browdy demurs from the widely accepted conclusion that gonorrhoea is much more difficult to treat when affecting the female, still he wisely abstains from giving his "successful" treatment of the chronic form in the female, and does not even attempt to give the points of diagnosis of this form, although he puts it into his classification of the disease. He also seems to disregard entirely the fact that gonorrhoea in the female is, in the majority of cases, most strongly entrenched in the recesses of the cervix uteri, and not in the vagina. How the treatment outlined in his letter will in any way affect disease in the cervix I fail to understand.

I, and I feel certain many others interested in the successful treatment of gonorrhoea in the female, would be deeply interested in obtaining a further basis for Dr. Browdy's statements.—I am, etc.,

LESTER SAMUELS, M.D.,
Medical Superintendent, Royal Chest Hospital,
August 23rd. London.

CAN ONE WORK WITH INTRACAPSULAR FRACTURE OF THE FEMUR?

SIR,—It is well known that a very trivial accident is sufficient to induce that condition which surgeons of a former generation delighted to expatiate about—intracapsular fracture of the head of the femur—but the patient is usually confined to bed in a helpless state, although there may be some doubt at first about the nature of the lesion.

I am now attending a patient—the usual typical woman of over 60—who exhibits all the classical signs, and to a remarkable extent, of intracapsular fracture at the hip-joint, but she never remained in bed a single day under the accident. She tripped on the stairs several months ago, and experienced a sharp pain in her hip, with a sense of fainting weakness. She immediately realized that something serious had happened, but feared to report the accident as she felt certain that she would be sent to hospital, and so jeopardize her situation. Her duties involved constant standing, walking and running up and down stairs, but with grim determination she persevered in this, never lying up for a single day. In the result, after almost twelve months, she is quite lame, due to the obvious and definite shortening, though to hide this deformity she tries to run rather than walk, and swings her body to the side opposite the long leg, twisting her spine half round, and she shows a very definite flattening over the gluteal region on the affected side. These are, of course, only the ordinary sequelae of intracapsular fracture which has received but little care. There is apparently slowly progressive absorption of the head of the bone. Pain is but little and infrequent, being mostly across the back, and due rather to her efforts to keep erect.

In a word, it is a most ordinary typical case of *intra*-capsular fracture of the head of the femur, but it is well to

place on record the fact that a patient may have suffered such an injury although she has not given up her work for a single day. In those civil actions which are becoming so common under the Employers' Liability and other Acts one hears evidence based on tradition and opinion rather than upon knowledge and fact. To obtain justice for our patients it is necessary that we should be familiar with the possibilities of an accident of which the patient desires at the moment to disguise the effects.—I am, etc.,

J. C. McWALTER, M.D., LL.D., M.R.I.A.

Dublin, Aug. 6th.

GALL STONES AND INFUSIONS.

SIR,—I have received several letters giving extracts from old herbals on the use of parsley. They all agree in attributing diuretic and cholagogue properties to the plant.

Dr. Gerald Wallace (Liverpool) quotes an old *Family Herbal*, by Sir John Hill, M.D. (no date):

"The roots are the part used in medicine. A strong decoction of them is good against the jaundice. It operates powerfully by urine and opens obstructions."

Dr. Wm. Owen Jones (Bowdon) gives an extract from *James's Dispensatory*, written by R. James, M.D., 1764:

"Parsley is attenuating, opening, detergent, and diuretic, and is principally used in obstructions of the liver, kidneys, and gall bladder."

Dr. Mildred Clark (Hospital for Women, Soho Square) quotes Culpepper's *British Herbal*, edition of 1865:

"Parsley openeth obstructions of the liver and spleen . . . an excellent medicine to help . . . the jaundice, the dropsy, and stone in the kidney, in this manner" [follows prescription for making infusion of parsley, fennel, anise, etc.]. "This openeth obstructions of the liver and spleen, and expelleth the dropsy and jaundice by urine."

Dr. Mildred Clark adds: "Apparently the herbalists of that day recognized its use in cases of jaundice, but attributed its action to the diuretic effect."

The active principle of parsley is probably antispasmodic chiefly, and may have some solvent action also. Few country practitioners of experience can have failed to come across occasional instances of the triumph of infusion of fresh broom tops in lumbago, etc., as of infusion of young foxglove leaves in "dropsy."—I am, etc.,

Bromsgrove, Aug. 21st. H. CAMERON KIDD.

The Services.

TEMPORARY R.A.M.C. COMMISSIONS.

THE War Office announces that it is prepared to grant temporary commissions in the Royal Army Medical Corps for a period of six months, for home service, to a limited number of medical men not over 55 years of age. Remuneration will be at the rate of £600 per annum for those who have not previously held commissions, and £650 for those who have served during the late war for a period of twelve months. In addition they will receive free rations, or an allowance in lieu when rations are not issued in kind, and the regulated allowances and expenses when travelling on duty. An outfit allowance of £30 will be made to those to whom it has not been previously issued.

Applications should be made at once in writing to the Secretary of the War Office (A.M.D.1), London, S.W.1, and should contain a statement of the candidate's age and previous service, if any.

NAVAL, MILITARY, AND AIR FORCE HYGIENE.

A GROUP is being formed within the Society of Medical Officers of Health by members interested in naval, military, and air force hygiene. The formation of such a group has the approval and support of the Director-General of the Medical Department of the Navy, the Director-General of the Army Medical Service, and the Director of Medical Service of the Air Force. Members of the group will be drawn from the three services and from their auxiliary forces, and membership will be confined to medical men who hold or who have held sanitary appointments in any of the services, as well as to those who are in the possession of a degree or diploma in sanitary science or public health or State medicine. The object of the group is to enable officers and ex-officers of the services and civil health officers to meet together for the purpose of hearing and discussing subjects of common interest, and thus to increase the liaison which exists at present between officers in the services and those medical men carrying out similar work under civil conditions. All medical men eligible for membership and interested in the opportunities thus provided are invited to communicate with Major W. N. W. Kennedy, O.B.E., Town Hall, Croydon, the acting honorary secretary. The first meeting of the group will be held on Friday, September 24th, at 4.15 p.m., when officers will be appointed and a paper on disinfection in the field will be read by Brigadier-General W. W. O. Beveridge, C.B., C.B.E., D.S.O., Director of Hygiene at the War Office.

DEATHS IN THE SERVICES.

Brigade Surgeon Lieut.-Colonel Peter Cullen, Bengal Medical Service (retired), died at Jubbulpore, Central Provinces of India, on July 21st, aged 84. He was born at Karnal on August 2nd, 1835, the son of Major Cullen, of the 9th Bengal Light Cavalry, and was educated at Calcutta and at Aberdeen, where he graduated M.B. and C.M. in 1867, after taking the M.R.C.S. in 1859. He entered the I.M.S. as assistant surgeon on July 27th, 1859, and retired with an extra compensation pension, on June 1st, 1892. Shortly before his retirement, in 1886, he took the D.P.H. in Edinburgh. He served in the second China war in 1860, and in 1862 he entered civil employment in the Central Provinces, where he remained for the rest of his service, having been for many years civil surgeon of Nimar. After his retirement he was ordained Deacon and Priest in 1900, and appointed an honorary chaplain on the Indian establishment, so had put in over half a century of service, the first thirty-three years in the I.M.S., and twenty more as a chaplain. He received the Kaisar-i-Hind gold medal (first class) on June 3rd, 1916.

Captain Subramania Doraisamy, Indian Medical Service, died at Bangalore on July 26th, aged 33. He was born on January 10th, 1888, educated at Madras University and Middlesex Hospital, took the M.R.C.S. and L.R.C.P.Lond. in 1912, and entered the I.M.S. as lieutenant on July 26th, 1913, being the first Madrasi who had done so, and was promoted to Captain on September 1st, 1915. He had served abroad throughout the war, first with the 108th Indian Field Ambulance in the Dardanelles, and later as specialist in operative surgery in the 5th Indian General Hospital, Egyptian Expeditionary Force. On his return to India in August, 1919, he was posted to the Indian Station Hospital at Bangalore.

Dr. William Ledingham Christie died on board the ss. *Moghiler*, in the Red Sea, on July 22nd, and was buried at sea, in the Gulf of Suez. He was educated at the University of Otago, where he graduated as M.D. in 1890, and at the London Hospital, taking the M.R.C.S. in 1893 and the F.R.C.S. in 1894. After filling the post of resident medical and surgical officer at the Royal Hospital for Women and Children at Bristol, he entered the service of the Rajah of Sarawak, and served as surgeon to the Gejijak Hospital. He took a temporary commission as lieutenant in the R.A.M.C. in 1915, and was promoted to captain in the following year.

Dr. George Broadfoot Serle died of pneumonia, after a very short illness, at Loch Ranza, Arran, on August 8th, aged 49. He was educated at Edinburgh, where he graduated as M.B. and C.M. in 1896, and as M.D. in 1906, also taking the D.P.H. of the Scottish Colleges in the latter year. He had served for many years in the Malay Peninsula as Principal Medical Officer to the Sultan and Government of Johore.

HONOURS.

THE following appointments and promotions to the Order of the British Empire are announced, for services rendered in Egypt and the Sudan:

C.B.E. (Civil Division).—Dr. Edward Smyth Crispin, Director Sudan Medical Department and Member of Governor-General's Council; Arthur Ferguson MacCallan, O.B.E., Ophthalmic Hospital, Egyptian Department of Public Health.

M.B.E. (Civil Division).—J. A. Clark, Medical Service, Egyptian Army.

FOREIGN DECORATIONS.

The following foreign decorations have been conferred in recognition of valuable services rendered:

Chinese Order of the Excellent Crop.—Second Class: S. G. Kirkby-Gomes. *Third Class:* Dr. D. Main, of the Church Missionary Society's Hospital at Hangkow.

Egyptian Order of the Nile.—Dr. H. P. Keatinge, late Director of the School of Medicine and Kasr-el-Aini Hospital, Cairo.

AN Army Council Instruction, just published, states that half-pay officers who require medical treatment for disabilities directly due to military service should apply before engaging private advice or treatment to the G.O.C. the Command in which they are situated. Arrangements will be made, if possible, for the officer's treatment at, or admission to, a military or Ministry of Pensions hospital. If this is not possible, or if the officer's condition makes it impossible for him to attend at or be removed to a hospital, the actual and necessary expenses of private treatment will be refunded.

Obituary.

PHILIP JOHN HENSLEY, M.A., M.D., F.R.C.P.,

Consulting Physician to St. Bartholomew's Hospital.

By the death of Dr. Hensley, which occurred at his home at Farnham on August 8th in his 82nd year, the profession has lost another of that fast diminishing class of physicians who were educated in the clinical school which drew its principles and inspiration from the teaching of Bright, Addison, Watson, and Trousseau. Born in 1838, Dr. Hensley entered Christ's College, Cambridge, in 1858, and devoted himself to the study of mathematics. It soon became evident that he possessed great ability in this branch of science, and it was no surprise to his friends to see his name placed fourth on the list of wranglers in 1861. He was soon elected a Fellow of his college, and, deciding to devote himself to the study of medicine, proceeded to St. Bartholomew's Hospital, where he became successively assistant physician, full physician, and consulting physician. He was also physician to the Royal Hospital for Diseases of the Chest, and spent a long career in the service of the hospital. In 1871 he was elected a Fellow of the Royal College of Physicians, and in the following year delivered the Goulstonian Lectures. He was an examiner in medicine to the College, and held the offices of councillor and censor.

Able as he proved himself to be, Dr. Hensley was scarcely known to the medical profession, and even in his own hospital he was appreciated at his true worth by a minority only of those with whom he came into contact. He contributed little to the literature of medicine, and possessed few of those qualities of presence and manner which do so much to arrest attention. In fact, Dr. Hensley spent a long and unobtrusive but most useful life at the hospital almost unheeded except by the more discerning. He himself was largely responsible for the fact that his great merits were unrecognized, for, besides being excessively shy and retiring, he was possessed of great mental and moral stature, which probably led him to regard it as derogatory to practise any arts for the purpose of earning the good opinion of the men he taught. He rather looked with a lofty contempt upon the world and its ways, and he met with the inevitable fate of those who, though in the world, are not of it – submergence. But with all his self-effacement there was no pusillanimity about the character of Hensley, for no man could hold opinions more tenaciously, and, whatever the cost, he was always prepared to defend the truth. He was perhaps regardless of the opinions of others, and his fate was to be treated with inadequate respect, and sometimes with ridicule. But those of us who knew him well and owe him a deep debt of gratitude are thankful for this opportunity of doing something, however humble, to rescue his name from partial oblivion, and of doing homage to a fine character and a powerful intellect.

Our memory carries us back many years when Hensley was assistant physician to St. Bartholomew's Hospital. He saw out-patients at that time, but students rarely disturbed the repose of his out-patient room, for no "tips" could be learnt there and no clinical demonstrations to assist the lame over the difficult mountain of the "Conjoint Examination" were offered. Nearly all who entered that room came to mock, and retired in the same spirit—but a few remained to bless. At first Dr. Hensley appeared to resent this intrusion, but soon he welcomed the small band and took a keen interest in teaching the principles of clinical medicine. His teaching was of the highest order, and was conceived in the broadest scientific manner. For therapeutics he had no great respect, but in diagnostics he displayed an ability that few could equal. With his clear-cut mathematical mind he approached this department of medicine in the true scientific way. Sometimes it was by the deductive road, but more often it was by that of synthesis, and he seemed always to know which road would lead him most easily to the conclusion. His clinical experience was wide, and it was a revelation to those who worked under him to find how much this unobtrusive man knew about disease. In the use of the stethoscope he was singularly apt, and his accuracy was at times astonishing. But if the class became large this clear and ample stream of knowledge and experience suddenly dried up, and there remained only the silent, shy Hensley of common report. He did not suffer fools gladly, and some, had they wit enough, must have smarted when subjected to a cutting sarcasm, scarcely heard, and muttered in the throat without so much as the twitch of a single facial muscle. But to the earnest student he was always the personification of kindness and attention. We speak thus concerning Dr. Hensley, first because we desire to discharge a debt we owe to his memory, and secondly because we feel that the general opinion likely to be formed of him will scarcely do adequate justice to his high character as a man and his great abilities as a physician.

A. C.

THE LATE MR. SINCLAIR WHITE.

MR. R. J. PYE-SMITH, Emeritus Professor of Surgery, University of Sheffield, writes:

Will you allow me, as an old friend and colleague of the late Sinclair White, to add a few words to the excellent account and appreciation of his work and life which appeared in the BRITISH MEDICAL JOURNAL of August 21st? He and I were closely associated during the greater part of the first twenty years that he spent at Sheffield, where, though ten years his senior, I had settled only three years earlier than he; and when, during another period of equal length, our fields of work were somewhat more separated than at first, we still kept up the most friendly relations. From the first he commanded the respect and confidence of all with whom he worked. To a logical and critical mind, a calm manner, and a strong will he added and developed sound judgement, and on such a foundation it was not long before a wide experience rendered him thoroughly well equipped for the leading position in surgery that he attained at Sheffield. An indefatigable worker, a good operator, a careful and accomplished surgeon, he never spared himself, but gave conscientiously of his best to all who sought his aid. As a colleague he was loyal and courteous, always helpful in conference, honourable and generous in thought and action. More than once have I known him courageously face illness and submit to treatment that it required determination as well as fortitude to meet and to undergo. It is, indeed, a matter for deep regret that he should have died, at a comparatively early age, at the very time when his hope of enjoying a well-earned retirement from practice seemed about to be realized; yet we may almost envy him in having completed his professional work before he had well passed the prime of life. That he was spared the downhill path of old age was no doubt due in part to the strain of the war. He had for several years prepared himself for its anticipated advent, and throughout its course he gave his ripe surgical experience and skill in the service of his country. The sympathy of all who had the pleasure of knowing him and his wife, of all who experienced the charm of her personality and witnessed the devotion with which she watched over and helped her husband throughout his long and busy professional career, will go out to Mrs. White in her bereavement and sorrow.

DR. A. W. DUNNING HUNT of Chagford died at his residence there on August 27th, at the age of 45. He had been in bad health for four years, but persevered in his work until a few weeks before the end. He was the third of his name in succession to practise medicine at Chagford; the first was Dr. Samuel Hunt, and the second his son, who practised for forty years. Dr. A. W. D. Hunt, who received his medical education at the Middlesex Hospital, took the diplomas of M.R.C.S., L.R.C.P. in 1899; he afterwards held appointments as house-physician at the Consumption Hospital, Brompton, and the Radcliffe Infirmary, Oxford. In 1904 he joined his father in practice at Chagford. He was greatly respected throughout the district, and much sympathy is felt with his widow and three young children.

WE have to announce with great regret the death of Dr. LIONEL SHINGLETON-SMITH at Brecon on August 21st, at the age of 43. On July 16th, while riding a motor bicycle, he came into collision with a motor car and sustained a compound fracture of the right leg. It was hoped that the limb might be saved, but septic complications necessitated amputation on August 9th. In spite of

this, death resulted from pyaemia. He received his medical education at Cambridge University and Bristol, taking the degrees of M.B., B.Ch. in 1908, and the diplomas of M.R.C.S., L.R.C.P. in 1905. After holding resident appointments at the Bristol Royal Infirmary and the South Devon Hospital, Plymouth, he settled at Brecon, being appointed honorary physician to the Brecon Infirmary. He was the best type of general practitioner. A kindly, conscientious, and hard-working man, he endeared himself to his patients of all classes, and his early death will be deeply mourned in Brecon for many years. He leaves a widow and four young children, for whom, as for his father, Dr. R. Shingleton-Smith, of Clifton, deep sympathy is felt in their great grief.

THE death recently at Aberystwyth of Dr. MORGAN DAVIES, of London, has removed a man who was very highly esteemed in Wales and among Welsh people resident in London. He graduated M.B., C.M.Aberd. in 1879, and L.R.C.P. in 1880. After holding the appointments of house-physician, house-surgeon, and resident accoucheur at the London Hospital, he settled in practice in London, and had long resided in Goring Street, Bishopsgate. In 1882 he took the F.R.C.S.Eng., and proceeded to the M.D. degree in 1884. The *Welsh Outlook* in speaking of him said that there were "thousands of Welsh homes in London in which his devotion and skill would always be remembered and blessed. Had he not been a doctor he might have made an immortal name for himself in literature. The little he published appeared in out-of-the-way places, but those who read his work will never forget its distinction of form and substance."

DR. FREDERICK IRVING DE LISLE, of Hawkes Bay, New Zealand, who died last year, was a native of Guernsey, and was educated at Guy's Hospital, where he qualified in 1871. He was a dresser in the English ambulance corps during the siege of Paris, and for four years was surgeon to St. Peter's Hospital, Guernsey. After practising at Napier, New Zealand, he took the diploma of D.P.H. in 1902, and afterwards settled at Hawkes Bay, where he acted as district health officer. A broad-minded man of many interests, he was Major in the New Zealand Territorial Force, surgeon to the Napier Hospital, and Justice of the Peace for the Colony. He was the author of *Increase of Cancer in New Zealand*, and of several other medical works. He is survived by a widow, three sons, and a daughter; his death, which took place at the age of 73, as the result of an accident, is widely deplored in New Zealand.

Medical News.

ON October 5th the honorary staff of the Manchester Royal Infirmary will continue the course of post-graduate lectures given last year.

THE annual dinner of old students of University College Hospital will be held on Friday, October 1st, at 7.30 p.m., at the Imperial Restaurant, Regent Street, London. The chair will be taken by Professor Harry Littlewood, C.M.G., M.Sc., F.R.C.S. Tickets, price 15s., not including wine, can be obtained from the honorary secretaries, Dr. A. M. H. Gray and Mr. Gwynne Williams, 30, New Cavendish Street, London, W.1.

AS already announced in this column, the first Annual Old Students' Dinner of St. Bartholomew's Hospital since the outbreak of war will be held on Friday, October 1st, at 7 o'clock, with Sir Anthony Bowlby in the chair. Owing to the large number of applications for seats it has now been found impossible to hold the dinner in the Great Hall of the hospital, and it will take place, by kind permission of the Lord Mayor, in the Guildhall. Communications relating to the dinner should be addressed to the Warden's House.

THE Blind Persons Act, 1920, comes into force on September 10th. Under it any person so blind as to be unable to perform any work for which eyesight is essential is entitled to a pension in the same way as he or she would hitherto have become entitled at the age of 70.

DR. WILLIAM EDMUND THOMAS, O.B.E., Bridgend, has been placed on the Commission of the Peace for Glamorgan.

DR. D. J. WILLIAMS of Llanelly, at one time a member of the Council of the British Medical Association, who left estate of the value of £27,489, bequeathed £250 to the Llanelly Hospital for the better equipment of the operating theatre.

THE Ministry of Health has issued a revised list, with hours of attendance, of the treatment centres for venereal diseases approved by the Ministry down to August, 1920.

THE Médaille de la Reconnaissance Française in silver has been conferred by the President of the French Republic on Mrs. Bedford Fenwick, Honorary Superintendent of the French Flag Nursing Corps.

A JOINT conference of the Central Association for the Care of the Mentally Defective and the National Special Schools Union will be held at the Church House, Westminster, at the end of November. The President of the Board of Education, Sir William Byrne (Chairman of the Board of Control), and Dr. Eichholz (Chief Medical Inspector, Board of Education), are expected to take part in the conference.

THE current issue of the *St. Bartholomew's Hospital Journal* announces the resignation of Viscount Sandhurst from the post of treasurer to that hospital, which he has held since 1908.

THE tenth Italian Congress of Paediatrics will be held at Trieste on September 24th to 26th. The subjects to be discussed are vaccine treatment of children's diseases, introduced by G. de Cristina and G. Caronia, and protection of legitimate and illegitimate children, by Dr. G. B. Allaria and E. Modigliani. Further information may be obtained from the Secretary, Dr. E. Modigliani, Via Palermo 28, Rome.

THE Medical Sickness, Annuity, and Life Assurance Society, formerly a friendly society but recently converted into a company, held its first general meeting on August 23rd in accordance with the statute requiring such a meeting to be held within three months after incorporation. The chairman, Dr. F. J. Allan, reported that the change had been carried through smoothly. All the members of the friendly society had become members of the society with the exception of twenty-one, most of them bordering on the age of 65, when their connexion with the society would in any case have been severed. Since the conversion the amount of life and sickness business had increased. Dr. Ball had resigned the office of medical examiner for the society after many years' service, and had been succeeded by Dr. David Forsyth. The retiring directors were re-elected, and the auditors and Mr. Sutton, the secretary, were congratulated on their work during the conversion.

THE first volume of the malaria bureau reports of the Federated Malay States contains some interesting papers by Dr. H. P. Hacker, medical entomologist to the Government. As the author points out, it is of fundamental importance to determine accurately the relative malaria-carrying properties of the various species of anophelines and the conditions which control these properties. This is an intricate field of investigation which calls for co-ordinated research, and Dr. Hacker lays down the lines along which it might be carried out. He draws attention to some recent work by Barber, who has suggested that in certain circumstances most of the species may become infected, and therefore may carry malaria. This suggestion calls for further investigation, for the fact, if true, would be of great importance. The volume contains six reports and is provided with an index. The photographs indicate the nature of the ground to be dealt with, and some of the measures that have been adopted for reducing and stamping out the anophelines implicated.

AN inquest was held at Birkenhead on August 26th in regard to the death of a married woman who had been under treatment by novarsenobillon. The first dose was 0.3 gram; a second dose of the same amount was given a week later, and a third of 0.45 gram, after an interval of another week. Eight days after the third injection the woman became unconscious and died. Chemical analysis afforded no evidence of narcotic poison, but arsenic to the amount of one grain was discovered in the organs. A *post-mortem* examination showed that the woman was suffering from pneumonia, and it is not clear that the death was caused by the novarsenobillon.

A COMMITTEE was formed in 1910 to arrange for the erection of a monument to Cesare Lombroso. As the sum subscribed is not sufficient to cover expenses the committee invite further subscriptions, which should be sent to Professor Enrico Ferri at Rome. The monument will be unveiled at Verona in the spring of 1921.

THE offices of the Director-General of Medical Services, Ministry of Pensions, have been transferred to the Crown Agents Annexe, 5, Millbank, Westminster, S.W.1.

THE first independent urological clinique in Belgium has recently been inaugurated at the University of Liége, under the charge of Professor A. Hogge.

THE well known French lunatic asylum at Charenton will shortly be converted into a maternity hospital containing a thousand beds.

LAST year there were 10,281 deaths from influenza in Paris.

PROFESSOR ADAM POLITZER, of whom a memoir appeared in our issue of August 21st, left his valuable otological library to the University of Vienna.

THE number of cases of plague in Java during May, June, and July was 536, 419, and 410 respectively. All of them were fatal.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin:* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"MEDICO" inquires as to his liability as a county tuberculosis officer, on a salary of £600 per annum plus expenses.

*** The expenses are not assessable, and the liability will be as follows:

	£	s.	d.
Assessable income £600 – $\frac{1}{10}$th of £600	540	0	0
Allowance for self and wife	225	0	0
Income chargeable to tax	315	0	0
That is, £225 at 3s.	33	15	0
£90 at 6s.	27	0	0
	60	15	0

The allowance for children applies only to those in life on the first day of the financial year—that is, on April 6th, 1920.

"H.O.M.B." asks what tax is payable on his income, particulars of which appear in the answer below—

			£	s.	d.
*** Earned income: Service pension ...	£210				
Public appointments ...	£700				
	£910				
Deduct $\frac{1}{10}$th	£91	—	816	0	0
Investment income			100	0	0
Disability pension (exempt)			*nil*		
Amount of assessable income			916	0	0
Allowances: Self and wife	£225				
Children	£90	—	315	0	0
Income chargeable to tax			631	0	0
£225 at 3s.			33	15	0
Balance—that is, £406 at 6s.			121	15	0
Total tax payable			155	11	0

"VERTEX" inquires what tax can be deducted from an unearned income of, say, £550, partly derived from house property and partly from war loan and other investments.

*** All income taxable by deduction is taxable at the full rate of 6s. in the £. In the case of our correspondent the tax payable on an investment income of £550 would be:

		£	s.	d.
Amount of income		550	0	0
Allowance for self and wife	£225			
" " one child	£36	— 261	0	0
Amount of income chargeable		289	0	0
Of which £225 is taxable at 3s.		33	15	0
And the balance, £64, is taxable at 6s.		19	4	0
Total		52	19	0

If the tax deducted from and borne by "Vertex" exceeds that sum he will be entitled to claim repayment at the end of this financial year. If a substantial portion of the income is from house property, it might save him the trouble of claiming repayment if he filed a statement of his total income, etc., with his local inspector of taxes on the appropriate form, and requested that his allowances should be deducted from the income tax assessed on the properties. If his daughter, aged 22 years, is receiving full-time education at an educational establishment, he is entitled to a further allowance of the tax (at 6s.) on £27.

COMPUTATION OF INCOME TAX, 1920-21.

MR. WILFRED T. FRY (62 and 63, Queen Street, London, E.C.4) writes: Now that the Finance Act for 1920-21 has become law, the following short synopsis of its chief provisions may be of interest to your readers;

The standard rate of income tax remains at 6s. in the £. In computing the total "assessable" income (except for super-tax purposes) a deduction of 10 per cent. of the earned portion may be made, not exceeding the sum of £200. The "assessable" income is further reduced by the following abatements and the residue is the "taxable" income. These abatements are granted irrespective of the total of the income.

	Abatement.
For a married man	£225
For a single man	£135
For the first child (Under 16 or receiving full time education)	£35
For every other child (Under 16 or receiving full time education)	£27
N.B.—No allowance for a child is granted where the child has an income in his own right exceeding £40 per annum.	
For a widower in respect of housekeeper looking after his children	£45
For a single man in respect of widowed mother or housekeeper looking after his brothers and sisters under 16	£45
For a dependent relative	£25

The first £225 of "taxable" income is taxed at half the standard rate of tax—namely, 3s.—and the balance at 6s. in the £. Life insurance premiums are also deductible at varying rates. Claims in respect of repairs to property are now extended to houses not exceeding £105 annual value in London, £90 in Scotland, and £78 elsewhere. Super-tax is chargeable on all incomes exceeding £2,000, at ascending rates. All amounts paid in land values duties can be reclaimed.

*** It should, perhaps, be added (*a*) that the payment for a single person is the same for either sex; (*b*) that the allowance for a dependent relative cannot be claimed if the dependant's income is in excess of £50; and (*c*) that the claim in respect of repairs to property is now extended to the total cost of repairs. The previous allowance was one-sixth.

LETTERS, NOTES, ETC.

DILATATION OF THE HEART.

DR. G. ARBOUR STEPHENS (Swansea) writes: On my return from a holiday I have read Dr. Kingscote's letter (p. 294) referring to mine on dilatation of the heart (p. 223), but he evidently misses the main point, for whether the enlargement be discovered by his pleximeter or not the difficulty is to decide as to the cause of that enlargement. Many practitioners jump to the conclusion that it is due to dilatation, without realizing how difficult it is to exclude pericarditis. My desire was to point out that for accurate diagnosis it is very essential that the pericardial conditions, including the state of the intrapericardial pressure, should be taken into account.

TREATMENT AFTER COLOTOMY.

DR. S. SAXON BARTON (Liverpool) writes: I have a patient who has had a fairly extensive resection of intestine, including the lower part of the ileum, caecum, and part of ascending

colon, and who has a large intestine colotomy wound on the left side. The patient is doing well, but is nearly distracted by the actions of the bowel at short intervals day and night. Opium and chalk mixtures, diet, intestinal antiseptics make no difference. The patient is gaining weight slowly. I should be very grateful for suggestions as to (1) diet, (2) treatment by drugs, (3) treatment by mechanical appliances.

DISLOCATION OF HUMERUS BY MUSCULAR ACTION.

DR. FRANK MARTIN (Dundalk, Ontario, Canada) writes: Referring to the communications in your issues of July 24th and August 7th, on dislocation of the humerus by muscular action, I have in mind a muscular young farmer, an epileptic, who dislocates his left humerus at almost every seizure. During the last three years I have reduced it under an anaesthetic a great many times. As he resides at least six miles from my office, it was causing him a great deal of suffering and me considerable inconvenience. I furnished his wife with an anaesthetic, instructed her how to reduce the dislocation by adduction and rotation, and she has reduced it quite successfully seven times.

RUPTURE OF VAGINA DURING COITUS.

DR. DANIEL O. TWINING (Salcombe) writes: I was called at 1 a.m. to see Mrs. X., aged 30, who had had three children; the youngest was six weeks old. The labour in this case had been precipitate, and the baby was born before my arrival: the recovery was uneventful. The history given was that "they had been doing as married people do," and that the wife had complained of sudden pain and had begun to bleed. The patient, when I saw her, had lost considerably and was still bleeding very freely. She complained of thirst; the pulse was 130. I plugged the vagina as tightly as possible with gauze, which controlled the bleeding, and sent her by car to the South Devon Hospital at Plymouth. She was seen on arrival by Mr. G. F. Aldous, who operated at once. There was a complete tear of the posterior fornix, and the cervix was also badly torn. The tear was stitched up, the cervix repaired, and the patient made an uneventful recovery. This injury in a young healthy woman so recently delivered of a child must be very uncommon.

POISONING BY SMALL DOSES OF ASPIRIN.

DR. ETHELBERT HEARN (Grindleford, near Sheffield) writes: I was most interested in the case of poisoning by 2½ grains of aspirin reported by Dr. R. Eccles Smith in the issue of the JOURNAL of August 21st, p. 300, as only three weeks ago I experienced personally almost the identical symptoms. In my case, however, 10 grains was the amount responsible, which I have frequently taken before, and even since, without any ill effects. My symptoms came on in about an hour, and my face was a sight to behold—eyes nearly closed with oedema of the lids; also intense itching. The inner sides of the thighs and the flexor surfaces of the arms and legs were the chief sites of the rash, which appeared in large raised patches, and disappeared in a few hours. I took a soda bath and saline purge, but felt rather seedy for a few days.

PUERPERAL SEPSIS.

DR. JOHN T. MACLACHLAN (Glasgow) writes: The very interesting discussion on the causation and treatment of puerperal sepsis (reported in the JOURNAL of August 21st, 1920) recalls a paper which I had the honour of publishing in your columns on July 22nd, 1911, and in which I advocated treatment by disinfection of the uterine cavity, and by efficient drainage of the uterus by a rigid perforated tube of glass. I advised (1) a thorough inspection of the parts, in a good light, with use of a speculum. If pus were found exuding from the os, (2) the interior of the uterus was swabbed with pure carbolic acid or other efficient germicide. (3) The next step advised was insertion into the cervix and lower part of the body of the uterus of a glass drainage tube, 3 in. long, with a quarter curve at the uterine end, and at the other end a flange over which was passed a stout rubber tube, which was cut, about ½ in. short of the vulva. (4) A large pad of Gamgee tissue was placed over the vulva, and fixed in position by means of diapers or a broad T-bandage. By connecting the rubber tube with a douche-can, placed not more than 2 ft. higher than the patient's pelvis (more forcible douching is apt to lead to rigors), uterine irrigation with warm potassium permanganate solution, 1 in 4,000 to 5,000, may be effected, hourly if necessary, with very little disturbance to the patient. With due deference and humility, I think this suggestion was a pioneer one in the treatment of puerperal sepsis.

POSTURE IN DEFAECATION.

DR. ALEX. MACRAE (Corbridge, Northumberland) writes: I notice in your issue of August 21st Dr. Vickery's advocacy of the squatting position in defaecation as a preventive of hernia and constipation. If the high seat of the modern closet is, as he says, the principal factor in the causation of hernia, how does he explain the very great incidence of that condition in a country such as Southern Arabia, where squatting is the posture invariably adopted both for micturition and defaecation? With the exception of haemorrhoids and cataract, hernia is, as far as I recollect, the major operation the surgeon in these parts has to perform most frequently. I have operated there many hundreds of times for the condition and should know. Constipation, also, is one of the Arab's most frequent complaints. "Batni yābis," as they put it—"my bowels are dry"—is one of the first tags of medical Arabic the surgeon in those parts has to learn.

HOUSE-FLIES AND DISEASE.

THE Ministry of Health has sent to medical officers of health copies of the Natural History Museum's economic pamphlet No. 1—"The House-fly as a Danger to Health: its life-history and how to deal with it." The pamphlet, which is from the pen of Major E. E. Austen, D.S.O., and embodies most of the matter contained in pamphlet No. 1A of the same series, reviewed in the JOURNAL on May 1st, 1920 (p. 607), is designed to aid the education of the public in the life-history of house-flies, the part which they play in the spread of epidemic diarrhoea and other diseases, and the most effective way of dealing with these insects. This useful pamphlet is illustrated by three plates containing six figures, and five figures in the text; additional copies may be obtained (price 3d.) by purchase direct from the British Museum (Natural History), Cromwell Road, S.W.7.

CHOLERA IN A NEW COUNTRY.

THE *Journal of Tropical Medicine and Hygiene* for August 2nd, 1920, contains an interesting account by Dr. A. L. Hoops of cholera as seen in Kedah, one of the non-federated Malay States. In 1906, even in the capital, a town of 10,000 people, there was no qualified medical man and no hospital, and the annual mortality—chiefly due to bowel diseases—in the overcrowded gaol was 25 to 50 per cent. Four cholera epidemics of increasing virulence are described; the disease appears to be endemic, and its spread is attributed to Osler's triad of causes—food, fingers, and flies. Dr. Hoops describes the prophylactic measures which he found most effective and tabulates the results of various methods of treatment; the injection of hypertonic saline solution appeared to be relatively most effective, but was suspected to aggravate the tendency to uraemia.

DEPILATORIES.

"C. I. E." recommends the following depilatory: Mix equal parts of barium sulphide and zinc oxide. Immediately before use make into a thick paste with water. Rub the paste on to the lip or chin, and leave it on until it causes a slight smarting (one or two minutes); then wash off with water. Apply some soothing ointment. The hair can be rubbed off in a short time—say ten minutes. The first application is sometimes not sufficient, so that a second or even third may be necessary. It is better to go slowly than risk wounding the skin by leaving it on too long the first time.

MEDICAL RESETTLEMENT.

DR. T. W. E. MORETON, Ex-D.C.M.S. Newport, Mon., writes: It depends upon the D.C.M.S. whether he gives sessions on medical boards to particular individuals, but he cannot morally refuse ex-service men except under very special circumstances. If he does so, an appeal can be made to the C.M.S. of the region, who will be sure to back the definite orders of the Ministry of Pensions. These were issued some time ago, and were to the effect that ex-service men were to be employed at the expense of civilian members of the board.

VERBUM SAPIENTI.

A CORRESPONDENT in one of the Home Counties informs us that he was recently visited by a man who represented himself to be a qualified instructor for an ambulance brigade which required a little more money to complete its equipment. He suggested to our correspondent that he should become local president of the British Red Cross Society. After reflecting on the matter our correspondent is disposed to advise brother practitioners to make inquiries before acceding to the proposals of the visitor.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 28, 32, 33, 34, 35, and 36 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 29, 30, and 31.

THE following appointment of certifying factory surgeon is vacant: Wotton-under-Edge (Gloucester).

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Six lines and under	0	7	6
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An average line contains six words.

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